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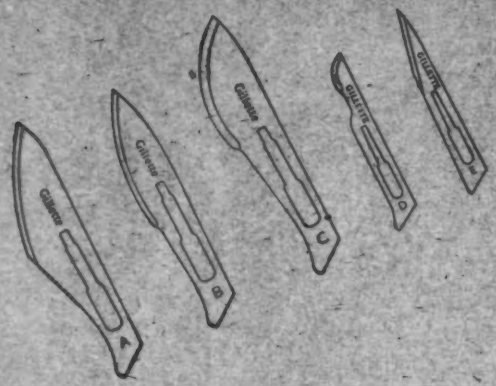

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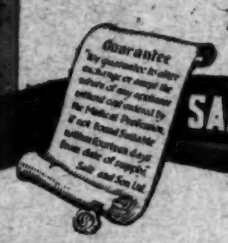

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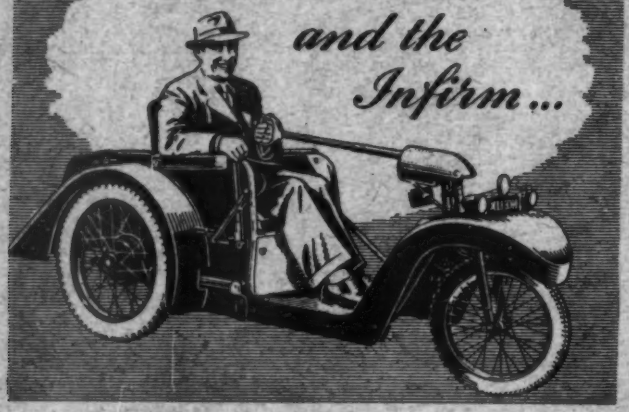

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LONDON SATURDAY AUGUST 20 1949

THE SURGERY OF PULMONARY STENOSIS*

BY

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The relief by operation of certain forms of cyanotic congenital heart disease (*morbus caeruleus*), especially those associated with pulmonary stenosis, has aroused widespread interest during the last two or three years, and this seems a suitable time to review the present position. In addition to assessing the results and value of the usual operation for this condition (the Blalock–Taussig operation), a preliminary account will be given of an entirely new operation which has so far proved successful and which may offer certain great advantages.

Human and Clinical Problem of Congenital Pulmonary Stenosis

The problem of the "blue baby" has always been a tragic one in which the doctor has hitherto been powerless to offer relief either to the sufferer or to the distracted parents. Although the plight of these children has been well known, it is only since the prospect of relief by operation has been available that the incidence and full tragedy of the condition has really come to light: those of us to whom these patients are brought for advice have been almost overwhelmed by the numbers and have been very impressed by the large amount of suffering and human misery that has been revealed. Many of these children have been almost hidden away in all parts of the country, not through any deliberate policy of concealment, but because many are necessarily, from their disability, confined to the house or to their room for the whole or the greater part of their lives. A few are able to get about out of doors moderately well under favourable conditions; some can manage to walk a short distance (10–100 yards); a number more must be wheeled in a "pram" or carried by their parents if they are to leave the house at all.

In extreme cases the child is very blue and dyspnoeic even while sitting or lying in bed and cannot move about at all; we have seen children as old as 6 years who have never walked. Some have been able to get about in a restricted fashion for a few years, and with the steady increase in their disability they finally become completely immobilized.

The strain on the parents and on the family life is considerable. The mother can rarely if ever leave the child, who not only occupies most of her attention but may give rise to periods of intense anxiety if, as often happens, it is subject to attacks of loss of consciousness and deep cyanosis and distress in which it appears to be near to death, or may indeed die. The burden on the mother is so great that she may abandon any idea of having more children, a situation that only heightens the tragedy when the blue child eventually dies. It is worthy of remark that the father always accompanies the mother when the child is brought for consultation; much of the carrying about of the child falls on the father, and it is in any case quite impossible for him not to be intimately involved in the management and anxiety of the grave family and domestic problem that the disabled child constitutes.

The more severely afflicted children die young; the mortality in the first few years of life is high. A number of children reach the early or even the late "teens," but usually with increasing disability. It often happens that a bright or intelligent boy or girl who has done well at school and even won scholarships becomes increasingly handicapped by the physical disability that prevents the fulfilment of what might otherwise be a promising and useful career. Only few patients are seen in the twenties who are able to carry out any useful occupation or employment.

The prognosis is poor, and this is strikingly shown by an analysis of the age of patients with cyanotic heart disease who have attended the congenital heart clinic at Guy's Hospital, which is under the care of Dr. Maurice Campbell. An analysis of the age incidence in 340 patients seen by Dr. Campbell over a period of some 15 months shows a rapid falling off which admits of no other general conclusion than that the prognosis is bad and becomes worse as the years pass. Campbell sums it up by stating that only one in two children is likely to survive till the age of 7 years; only one in four is likely to reach the age of 14, and less than one in 10 will reach 21. Moreover, 24 of these patients died while awaiting admission to hospital. These observations of Campbell's not only are of value to us in assessing the gravity and prognosis of the disease, but are also of assistance to the parent in making their difficult decision whether to agree to submit their child to the dangers of an operation.

The Place of Surgery

Although operation on these cases carries a considerable risk, the risk is in most cases far less than that of leaving the condition untreated. Moreover, operation alone offers a prospect of relief, and, as will be shown later in a discussion of the results, it offers a very good chance of striking and dramatic relief. It is now fair to say that surgery has fully justified itself by its results.

It is scarcely necessary to emphasize that operation in these cases is both difficult and dangerous. It is a type of surgery that is not for the lone operator. The problems involved are so numerous and complex that teamwork is essential if good results are to be obtained. It is not enough for the surgeon to acquaint himself merely

*The Alexander Simpson-Smith Lecture, delivered at the Medical Society of London on June 15.

with the technical details of vascular anastomosis and to think that he can then embark upon operations with safety and success. Team-work is of course essential in the operating theatre, where in addition to the surgical and nursing assistants the anaesthetist plays a part of fundamental importance which deserves a special tribute. Rink, Helliwell, and Hutton (1948) have recently published an account of their anaesthetic experiences.

Even more important, however, than team-work in the theatre is team-work before the operation, for much must be done in the diagnosis and selection of the correct cases for operation. Although it is almost a fashion to-day to speak of the need for team-work, it is difficult to overemphasize the need for it in the problem before us. Close co-operation with a cardiologist is self-evident; good radiology is essential, and we are fortunate at Guy's Hospital in having the valuable and whole-hearted co-operation of Dr. T. Hills in this; the physiologist and clinical research worker can contribute much in the study and application of the various tests and investigations of respiratory and circulatory efficiency; the anatomist and the pathologist are also valuable helpers. At Guy's Hospital there is a body of some 15 people actively engaged in the management of these cases, and all play their part in the efficiency and success of the service.

DIAGNOSIS AND METHODS OF INVESTIGATION

Until recently there was little general interest in the differential diagnosis of cyanotic heart disease, although a few enthusiasts have made invaluable studies and presentations of these cases. Until the advent of surgery great accuracy in diagnosis was rather an academic refinement of interest to the occasional clinician, as to the pathologist. Once the possibility of relief by operation arises it becomes essential to make the diagnosis as complete as possible before operation so as to avoid the hopeless case and to recognize the ones that can be helped. Careful clinical assessment, aided by routine radiography, is clearly of first importance, and for complete accounts of the clinical presentation it is best to consult the book by Helen Taussig (1947) or the comprehensive article by Campbell (1948). To arrive at a more exact diagnosis, especially in the very difficult cases, it is necessary to use cardiac catheterization and angiocardiography, both of which afford very valuable information.

The Blalock–Taussig Postulate

In considering a case for surgery it is of fundamental importance to realize what one seeks to achieve by operation. Blalock and Taussig (1945) have pointed out that the cyanosis is due to two things—namely, mixing of venous and arterial blood and an inadequate supply of blood to the lungs. The most important element of their contribution is the conception of the part played by the second feature—an inadequate pulmonary blood flow. As a result of this they postulated that the cyanosis and disability could be relieved by improving the blood supply to the lungs by anastomosing a systemic artery to a pulmonary artery. The proof of the correctness of their postulate lies in the good results of their operation: cyanosis is often completely relieved and is always greatly lessened when a satisfactory anastomosis is possible; the disability is also greatly relieved. As the venous–arterial shunt persists it may be impossible, except in the slighter cases, to relieve the cyanosis completely, at any rate after exercise.

It follows from this that the most important matter to be considered in the assessment of a case is in regard to the pulmonary blood flow; we must try to determine whether this is decreased or not.

Radiography and Radioscopy

Radiography and radioscopy are of first importance, for by their use it is possible at once to exclude those cases in which there is evidence of a plentiful or excessive blood flow to the lungs as shown by the degree of vascularity of the lung fields and visible pulsation of the pulmonary arteries. Atrial septal defect and perhaps Eisenmenger's complex are the common examples of this; transposition of the great vessels may present a similar picture.

In contrast, a typical case of Fallot's tetralogy has clear lung fields due to poor vascularity, and there is no visible pulsation in the hilar vessels. Careful radioscopy should give the necessary information, although in a doubtful case a direct reading of the pressure in the pulmonary artery will be decisive. This can be done during cardiac catheterization.

Cardiac Catheterization

A catheter passed along a vein into the right atrium can also be manipulated into the right ventricle and thence into the pulmonary artery and into its right and left branches. If septal defects are present the catheter may pass into the left atrium and then into a pulmonary vein, or from the right ventricle into the aorta (when the aorta is overriding). Pressure readings are taken in the various positions of the catheter, and also blood samples for estimating the oxygen content. In this way a great deal of valuable information is obtained. For instance, in pulmonary stenosis the pressure in the right ventricle is raised but that in the pulmonary artery is very low. As mentioned above, in Eisenmenger's complex the pulmonary arterial pressure will be high. By noting the exact level at which the drop in pulmonary blood pressure occurs it may be possible to obtain evidence concerning the site of the pulmonary stenosis—for example, whether it is valvular or infundibular.

The information afforded by cardiac catheterization is essentially complementary to other investigations and especially to angiocardiography.

Angiocardiography

This examination is of great value, and our policy at Guy's is to use it on all patients unless there is a grave contraindication. For instance, it is occasionally waived in the case of a small child who has severe cyanosis and in whom it is felt that the examination involves a considerable extra risk. Otherwise we feel that, quite apart from the diagnostic value of the test, the anatomical information it affords the surgeon is indispensable and of a character that is otherwise revealed only by thoracotomy.

It is easy, by angiocardiograms, to demonstrate the presence of a right-to-left shunt, because the aorta and its branches may be opacified after two to three seconds, simultaneously with the pulmonary arteries. Indeed, when there is a large shunt and a severe degree of pulmonary stenosis most of the contrast medium passes rapidly into the systemic circulation and so little enters the pulmonary circulation that the pulmonary arteries may be poorly shown.

By studying the anatomical arrangement of the great vessels the surgeon can form an idea whether they are likely to be suitable for making an anastomosis. It may, for instance, be shown that the aorta is very high and the subclavian artery so short that it could not be brought

down to meet the pulmonary artery; in such a case the surgeon would know that he had to use the aorta itself for the anastomosis (Potts's operation: Potts *et al.*, 1946). It is also valuable to know if both pulmonary arteries are present or whether one is absent or so small as to be useless. Conversely, if there is no deficiency of the pulmonary circulation, or even an excessive blood supply, this also will be revealed by the angiocardiograms.

SURGICAL METHODS

Having satisfied the first postulates—namely, that there are a deficient blood supply to the lungs, a pulmonary artery to receive the blood, and a suitable systemic artery to provide it—it is necessary to consider the most suitable age for operation and the most suitable type of procedure.

Blalock does not recommend operation before the age of 2 years unless the patient's condition is so grave that he is unlikely to survive long without it. The drawback to operating on young children is that the vessels may be too small to allow an efficient anastomosis to be made, or the anastomosis may cease to be adequate as the child grows up. Our policy at Guy's has been not to operate much before the age of 5 years unless for special reasons. This is partly because we feel that the older children on our waiting-list cannot with safety wait as long as most of the younger children can. The youngest child in our series was aged 2 years 11 months. Blalock also prefers not to operate on a patient over 20 years of age if possible. With this we strongly agree, for in these older patients the operative risks are far greater. The oldest patient we have operated on successfully was aged 29 years.

Certain general technical features of the operation need brief discussion, and for a fuller consideration I would advise reference to the article by Baker, Brock, Campbell, and Suzman (1949). Most of the points raised introduce important practical problems that should concern the surgeon undertaking this work.

Blalock's Operation or the Potts Modification

The Potts–Smith modification of aortic-pulmonary anastomosis has attracted enough attention to make it desirable to discuss its advantages and disadvantages first. It does not introduce a new principle, but is a technical modification based upon the original principles laid down by Blalock and Taussig. They postulated that certain cases of cyanotic congenital heart disease in which pulmonary stenosis existed could be improved by anastomosing a systemic artery to a pulmonary artery in order to increase the blood flow to the lungs, and in their preliminary discussions mentioned the use of the aorta as a possibility in place of one of its branches. It remained for Potts and his colleagues to introduce the ingenious clamp that made this possible. There has been a tendency on the part of a number of surgeons to use the Potts operation because it seems to be quicker and easier than the Blalock operation. It is true that Potts's operation may be preferable in a small child in whom the aortic branches are too small, or indeed in any patient in whom they are too small or too short. Moreover, it is possible to vary the size of the stoma at will. On the other hand, if it is possible to use the subclavian artery to make an effective anastomosis it would appear to be unjustifiable to choose deliberately to use the aorta instead. It cannot be good surgery to interfere with a structure of the importance of the aorta if it can be avoided. If any mishap occurs while the subclavian artery is being used it should be possible to control the situation by ligating the artery. If trouble occurs when the aorta is used it may not be possible to retrieve the situation.

There would seem to be a very real danger in the size of the stoma that is made when aortic-pulmonary anastomosis is used; if it is made too large a great extra strain is thrown on the heart. Acute pulmonary oedema may appear soon after the operation, or congestive heart failure may supervene later. I have already seen one case of severe congestive heart failure after the operation.

The great advantage of the Potts operation lies in those cases in which the subclavian artery is too small or too short and in which it has been suggested that the carotid or innominate artery should be used. The use of the aorta avoids interfering with these vessels, and thus spares the patient the greatly increased mortality (33%) and also the danger of severe paralysis from cerebral ischaemia. The use of the carotid or innominate artery is no longer justified in view of the high mortality and morbidity that have occurred.

Antero-lateral or Postero-lateral Incision

Blalock's practice of using the antero-lateral intercostal incision was followed almost exclusively in our first 50 cases, but has been departed from since then. In a very ill patient the antero-lateral approach may throw a smaller strain on the lungs and circulation than a postero-lateral. In general, however, the exposure provided by the antero-lateral intercostal incision may be rather cramped, and if the ribs are awkwardly shaped so as to make a high narrow chest the difficulties of dissection and ligation of the highest branches of the subclavian artery may be extreme. In such cases the exposure commits one to a set of circumstances that really constitutes faulty surgery.

My present practice is to use the antero-lateral approach only in those cases in which it may be necessary to operate upon the right ventricle itself. For all other cases a postero-lateral incision is used, with resection of the whole length of the fourth rib from transverse process to costal cartilage. By resecting a rib instead of incising the intercostal space there is much less bleeding at the time and less risk of oozing afterwards; post-operative pain is also lessened by avoiding the need for pericostal sutures. The exposure afforded by the long postero-lateral approach is a great advantage and allows a much more easy, rapid, and safe exposure of the vessels, and inspires the surgeon with much greater confidence that he has more complete control of the situation. The performance of the actual anastomosis is rather easier than from the front. Moreover, the postero-lateral incision allows use of either the subclavian artery or the aorta according to the conditions found. I have even, on one occasion, performed a direct operation on the right ventricle through a postero-lateral incision, but it is unusual to be able to do this with ease and safety; an anterior incision is preferable.

Right or Left Side

Blalock's earlier recommendation was to use the side opposite to the aortic arch in all but adults or patients in the later teens—that is, when the aorta is left-sided a right-sided incision should be made. This is in order to use the subclavian artery as it arises from the innominate artery; when turned down it forms an easy T-junction with the parent trunk, whereas if the subclavian artery is used as it arises from the aorta it may be kinked and flattened. In his latest paper Blalock (1948) states that he uses the right side (when the aorta is left-sided) in all patients between the ages of 2 and 12, but prefers the left approach in children under 2 and in patients over 12 who have attained

most of their growth or who are more than 5 feet (1.52 metres) in height.

After using the right-sided approach in nearly 50 cases I have abandoned it except in exceptional circumstances. In spite of increased familiarity and experience with the operation the dissection of the systemic artery on the right side may be extremely difficult, not a little dangerous, and certainly very exacting; especially so when the superior vena cava is large and dilated. If the innominate artery branches high up, the subclavian may be too short to reach the pulmonary artery; hence an anastomosis is possible only if the carotid artery is divided or the innominate artery is used. As already mentioned, this is no longer considered justifiable.

Another disadvantage of the right-sided approach is that it does not permit a proper examination of the heart and origin of the pulmonary artery and aorta in order to make as complete a diagnosis as possible. When the left side is used for the approach a very thorough examination can be made if the pericardium is opened.

In no case that I have so far done from the left side has the subclavian artery been so kinked or flattened that it jeopardizes the efficiency of the anastomosis. In any case in which the artery is found to be too short to use without tension, kinking, and flattening I either employ direct end-to-end anastomosis between the subclavian artery and the pulmonary artery or use the Potts operation of aortic-pulmonary anastomosis.

Post-operative Haemorrhage

We have found that there is a great tendency for bleeding to occur into the chest after operation in older patients who are severely cyanosed and polycythaemic and in younger patients with complete pulmonary atresia who have been submitted to exploration. This tendency is extremely dangerous, and severe bleeding occurs even after every care has been taken with haemostasis. The patients may appear to be progressing satisfactorily, and then collapse and die within a few minutes. The condition is insidious and rapid in its development. The best safeguard is the use of an intercostal drain which enables the bleeding to be recognized early and spares the patient the cumulative mechanical effects of the haemothorax. Even frequent examinations and radiography may not prevent rapid deterioration, especially during the night hours.

In the average young patient we have not, until recently, used a drainage-tube, because usually one or two aspirations are all that is needed and often aspiration is never wanted. However, our 99th patient, a boy of 7 years in whom operation was straightforward, died suddenly six hours later from the same cause; we therefore now make it a rule to drain every case.

These operations can be difficult and very exacting, demanding all one's patience, skill, and endurance; they may be made more anxious by deterioration of the patient's general condition. Nevertheless, we have found that it is best to press on quietly even when things seem almost desperate, and not to give up until it becomes quite clear that success is impossible. This applies not only to anatomical difficulties but to physiological ones as well. On several occasions the anaesthetist has reported the patient's condition as very grave, and the temptation to abandon the operation has been great. In almost all of these cases continuance with the operation after a short wait has been rewarded by final success.

The most striking example of the soundness of this policy came in the case of a very ill child of 5, who was deeply cyanosed, with severe recurrent pain in the chest even when resting in bed; she was incapable of any activity at all. During induction of anaesthesia her breathing stopped, and her heart also. The heart's action was restored after intracardiac injection of adrenaline. Spontaneous respiration did not return for over 40 minutes. Her condition was of course desperate. At the end of an hour her condition had begun to improve and it was decided to proceed with the operation. This was completed with success. The child made an excellent recovery and has continued to do well; she walks and runs about easily, a thing she was quite unable to do before.

Results

In his latest paper Blalock (1948) reports 610 cases treated by operation in which the overall mortality was 17%. The mortality ranged from 9% when the subclavian artery was used to 33% with the carotid or innominate. In the first 50 cases from Guy's (Baker, Brock, Campbell, and Suzman, 1949) seven deaths occurred, a mortality of 14%. The total number of cases in which the Blalock or Potts operation has been done or attempted at Guy's is now 83, and 13 of these patients died—a mortality of 15.5%. Among these 83 were many severely ill patients who were very poor risks; also included were a number in the late teens and the twenties.

Blalock states that the result was excellent in about 75% of his cases. The first 50 of our cases have been carefully followed and assessed by Campbell, who states that, in addition to the seven who died, in three there was no improvement and in four the result was only "fair." "This leaves 33 (66%) in which the result was almost perfect. The patients' capacity was enormously increased, up to walking several miles instead of a few hundred yards, or getting about all day instead of being an invalid mainly in the house. To the parents the improvement seemed almost miraculous."

The results in the good cases are indeed strikingly dramatic; in addition to the banishment of disability the cyanosis is usually changed to a good normal pink, although in some a mild cyanosis remains or can be noticed after exercise. It should be realized that the right-to-left shunt persists, and so it is not surprising that some degree of cyanosis may remain in the more severe cases, especially after exercise.

It would be possible to cite case after case of really dramatic improvement in the amount of activity possible. A typical case may be mentioned of a boy of 14 years who could walk only some 20 yards before becoming distressed and squatting down. Within a few months of operation he was able to walk several miles, could ride a horse, was learning to ride a motor-cycle, and is hoping to become a dirt-track rider.

It is a regular and rather heartening experience to receive letters from parents who state that they feel they must write and say what a joy and relief it is for them to watch their child setting off happily to school or playing with other children without distress, whereas before the operation such activities were quite impossible. In not a few cases a steady deterioration with increasingly frequent attacks of deep cyanosis and unconsciousness and the probability of death within a few months has been changed for apparent good health with no cyanosis or disability and complete cessation of the alarming attacks.

DIRECT ATTACK UPON THE STENOSIS

Although the Blalock–Taussig operation is brilliant in its conception and results, it has certain possible disadvantages, at any rate in theory. It is, in effect, a short-circuiting operation in which an obstruction is by-passed,

and in this respect is comparable in the soundness of its conception and the excellence of its results to the other classic short-circuiting operations in surgery such as gastro-jejunostomy for pyloric obstruction.

It differs from these operations, however, in that by creating an arteriovenous leak it actually imposes a new burden upon the body; in effect it gives the patient an artificial ductus arteriosus, a condition which, when it occurs naturally, we prefer to treat by operative closure.

On the other hand, there can be little doubt that in many cases this is the lesser of two evils, and, as Blalock and Taussig themselves say, there is no justification for letting a patient suffer and die from anoxaemia to-day just because he may develop trouble from his artificial ductus arteriosus in later years. Moreover, they suggest that in the presence of the interventricular septal defect and the overriding aorta the arteriovenous leak may not have the same significance as in an otherwise normal heart.

Whatever the answer to that question is, and time alone can tell, it is certain that surgery is not static, and that we must try to assess the feasibility and efficacy of direct operations upon the pulmonary stenosis in an attempt to relieve it. When one contemplates the small hole through which all the blood to the lungs must pass, whether the obstruction be at the pulmonary valves or lower down, it seems as if surgery should be able to offer relief to this mechanical obstruction.

Valvular Stenosis

In its simplest form the pulmonary stenosis may consist of a pure valvular stenosis with no interventricular septal defect, a condition that can be recognized clinically and can be confirmed by appropriate investigations. In most of these cases cyanosis is absent or slight in early life and appears later, usually during the teens; this is probably due to the effects of an increasing obstruction which in the presence of a patent foramen ovale causes a right-to-left atrial shunt to develop. In this type of stenosis it is certain that Blalock's operation is wrong, because it merely imposes an extra strain on the left ventricle and does nothing to relieve the strain on the right ventricle.

In a certain number of cases of Fallot's tetralogy (the exact proportion as yet being unassessed) the stenosis is also valvular in type.

The correct treatment for this condition is relief of the valvular obstruction by valvulotomy, an operation which I recorded a year ago (Brock, 1948) and which I have performed with success in five cases. In one of these not enough time has elapsed to assess the final result, although so far it would appear to be good; in two the result is moderately satisfactory and in two it is excellent. The valve is divided by inserting a special valvulotome through the wall of the right ventricle and passing it up into the pulmonary artery; haemorrhage from the heart is controlled by two rows of interlocking mattress sutures.

The actual valvulotomy is formidable, perhaps alarmingly so, but is not technically very difficult. The difficulties in the way of successful operation lie in the liability of the heart to fail quite suddenly soon after the chest is opened or as soon as it is touched. This is probably directly due to the extremely small size of the pulmonary outlet; while the heart is beating efficiently the circulation is maintained, after a fashion, but as soon as any fall in peripheral pressure occurs, with a corresponding fall in cardiac output, too little blood passes through the pinhole valve orifice to maintain the circulation. The coronary circulation suffers; the heart's action deteriorates further and soon ceases altogether.

Pulmonary valvulotomy was attempted in 10 cases, but in three the heart failed soon after the chest was opened and all three patients died. In the last of these three, as it was clear that the heart was making no response to all efforts at resuscitation, valvulotomy was performed in order to relieve the strain on the right ventricle and to enable blood to pass to the lungs. The effect was dramatic, for the heart at once revived and its powerful action was fully restored. Unfortunately the circulation had been arrested too long for the brain to have escaped injury, and, although the blood pressure was well maintained, death occurred six hours later from cerebral damage. From my experience with these three cases I am convinced that when a pulmonary valvulotomy is planned one must be prepared for the heart to fail soon after it is exposed, and if this occurs it is essential to perform valvulotomy *at once* and then to concentrate on reviving the heart; for unless this is done the heart is not likely to respond at all, or not before fatal cerebral damage has occurred.

Of the remaining two deaths, one occurred on the table from heart failure after the valve had been divided, but it was a badly chosen case of a woman in the twenties with a rigid calcified valve; the other patient (a woman aged 27) died from a haemothorax some hours after operation.

One of the patients in whom the result is classed as excellent is one of the three cases previously reported (Brock, 1948; Case H 107, Case 2). This patient, a girl aged 11, is a normal colour and leads a normal life. One other of the successful cases is worthy of special mention.

The patient, a married woman aged 26 (Ref. No. 0207), was deeply cyanosed and could walk only a few yards; her condition was deteriorating rapidly and she obviously had little time to live unless something could be done to help her. She was even unable to eat an adequate amount of food because of the severe dyspnoea that followed a meal. All her symptoms have been relieved; she is an excellent colour and leads a normal life; she has gained over a stone in weight since her operation in December last. Also significant is the fact that, although she had been married for several years and wanted children, she had never conceived. Although warned against an early pregnancy, she has become pregnant. In view of her good general condition the pregnancy is being allowed to continue. It will indeed be gratifying if she is safely delivered of a live child.

Infundibular Stenosis

Although valvular stenosis does occur in Fallot's tetralogy it is certain that infundibular stenosis is more common, and the more cases one sees and operates upon the clearer it becomes that if direct relief of the obstruction is to be at all widely applicable to these cases it must include direct attack upon the infundibular stenosis itself. This is, of course, a far more complicated matter than relief of a valvular stenosis by valvulotomy, since it involves resection of a portion of the actual wall of the active ventricular muscle and not simple division of a narrowed valve at the exit of the ventricle: it has been said that even if it were possible to operate upon the infundibular obstruction it would probably recur after the operation. It has also been suggested that since we have such an effective procedure as the Blalock–Taussig operation it is scarcely justifiable to embark upon a more elaborate intracardiac one.

It has already been pointed out that surgery is not static and therefore the feasibility and efficacy of direct relief of the infundibular stenosis must be considered carefully and critically. A moment's reflection shows that if it were possible to relieve this infundibular stenosis it would be far better than short-circuiting it as in Blalock's operation. The obstruction would then be relieved directly and no

new strain would be thrown upon the heart by the creation of the artificial ductus arteriosus.

Moreover, another important advantage would be conferred by the operation. In Fallot's tetralogy the cyanosis and disability are due to two things—the pulmonary stenosis which allows too little blood to go to the lungs, and the septal defect with an overriding aorta which allows a mixing of venous with arterial blood. The Blalock operation increases the blood supply to the lungs but does not relieve the right-to-left intracardiac shunt (except in so far that it pays back into the pulmonary circulation imperfectly oxygenated blood that has failed to enter the pulmonary artery and has passed into the aorta). I wish to emphasize that these two factors are to a great extent interrelated, a fact to which insufficient attention has been given.

If the degree of pulmonary stenosis is severe, the blood, in ventricular systole, cannot pass quickly enough into the pulmonary artery and must be diverted into the overriding aorta; if the degree of pulmonary stenosis is slight, a far greater portion of the blood ejected during ventricular systole can pass into the pulmonary artery and a correspondingly smaller amount passes into the aorta (Fig. 1).

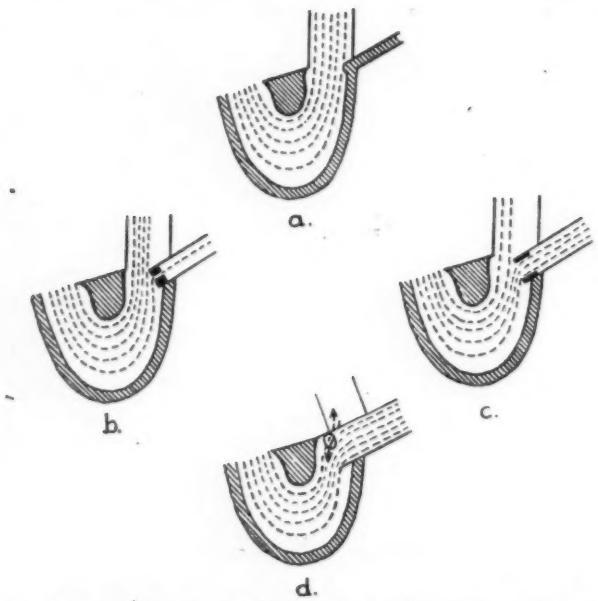

FIG. 1.—Diagrams illustrating the importance of the degree of pulmonary stenosis in determining the amount of right-to-left shunting that occurs in the presence of an overriding aorta. In *a* there is complete pulmonary atresia, and all the blood passes into the aorta. In *b* there is a high degree of pulmonary stenosis and most of the blood from the right ventricle enters the aorta. In *c*, in which the pulmonary stenosis is less or has been relieved by operation, more blood enters the pulmonary artery and correspondingly less escapes into the aorta. In *d*, in which there is no pulmonary stenosis and only a small interventricular septal defect, there is no appreciable mixing.

Nature itself provides us with instances of the two extremes: on the one hand we have the example of complete pulmonary atresia in which the exit of blood from the right ventricle into the pulmonary artery is completely prevented (Fig. 1*a*); on the other hand we have pure interventricular septal defect with no pulmonary stenosis ("maladie de Roger"), in which no apparent right-to-left mixing occurs (Fig. 1*d*). It is true there is no overriding aorta.

In the case of complete pulmonary atresia, if we imagine opening up even a small lumen to the pulmonary artery, instead of all the blood passing through the right-to-left shunt some could pass into the pulmonary arteries. Conversely, if we imagine a pulmonary stenosis supervening in the "maladie de Roger," it is clear that a proportion of the blood normally ejected by the right ventricle into the pulmonary artery would pass through the septal defect, the exact amount being directly proportional to the degree of the pulmonary stenosis; if the pulmonary artery were narrowed down to complete obliteration the only exit for the right ventricular blood would be through the septal defect and thence into the aorta.

It is not unreasonable to assume that in Fallot's tetralogy there is a similar correlation between the severity of the pulmonary stenosis and the severity of the right-to-left shunt. As the years pass by, the stenosed channel becomes more rigid, warty vegetations appear, and the lumen is further diminished. As the passage to the lungs becomes more difficult, correspondingly more blood escapes into the systemic circulation, and cyanosis and disability become worse. The pulmonary obstruction functions rather like the sluice-gates of a river, regulating the amount of flow that occurs in the main stream or is diverted to a side stream. The effect of direct operation upon the pulmonary stenosis and of relieving the obstruction to the outflow of the right ventricle will be not only to increase the amount of blood going to the lungs but to lessen the amount passing through the shunt and causing venous arterial mixing (Fig. 1*c*).

The same mechanism is seen, although it functions in a more roundabout manner, in pulmonary valvular stenosis without an interventricular septal defect but with a patent foramen ovale. There may be little or no cyanosis in early life, but as the stenosis becomes more severe the pressure behind the obstruction rises and the effect is eventually felt on the right atrium, with consequent passage of blood from right to left through the interatrial septum. By dividing the stenosed pulmonary valve one not only allows more blood to go to the lungs but the back-pressure effect is also relieved and the interatrial right-to-left shunt is corrected. The cyanosis and disability are thus relieved by a dual mechanism.

This correlation between the degree of the pulmonary stenosis and the amount of right-to-left shunt appears also to offer a very reasonable explanation for the severe attacks of cyanosis, often with loss of consciousness, that are apt to afflict these patients. They occur with slight exercise or even when the patient is at rest. Although in older patients the walls of the stenosed infundibular canal may become very fibrous and rigid, in most patients, and certainly in young children, there is much more muscle than fibrous tissue surrounding the narrowed channel. One of the functions of muscle, in addition to that of contraction, is to exhibit tonus, and this tonus can vary. It is not improbable that variation of tonus of the encircling muscle may affect the functional lumen of the already narrowed infundibular channel, diminishing further the blood flow to the lungs and also causing more blood to be diverted into the systemic circulation through the intracardiac shunt.

This concept of variations in the tonus of cardiac muscle resulting in corresponding variations in the distribution of blood through the various anomalous channels, even though largely theoretical, provides a satisfactory explanation for the dramatic variations in the patient's cyanosis and general condition. It is, in fact, difficult to picture a more satisfactory explanation. Moreover, in the heart of Fallot's tetralogy, as the cardiac output increases with exercise, the narrowed pulmonary canal is too small to take advantage of the greatly increased blood flow, most of which is

inevitably diverted into the systemic circulation, thus rapidly increasing the cyanosis and disability.

If these arguments are true it follows that by a direct operation on the stenosis, which relieves the obstruction to the blood flow to the lungs, we increase the flow of blood to the lungs and at the same time diminish the escape of venous blood into the systemic circulation through the intracardiac shunt. During exercise the pulmonary circulation is further able to avail itself of the increased cardiac output. The procedure, therefore, would appear to be superior to a simple short-circuiting operation that neither relieves the obstruction nor lessens the shunt. The only way to stop the venous-arterial shunt completely would be to close the interventricular septal defect and correct the overriding of the aorta. It would seem very difficult to achieve both these things by operation; at present we can only hope to lessen the degree of the shunting by opening up the pulmonary channel.

Observation of the types of patient presenting themselves for treatment has impressed me that it is possible to separate out two rather rough groups. Not all patients fall into these two groups; some are intermediate, but they do reveal two extremes. In one group are the very blue and disabled patients, in particular the younger children with severe heart lesions; the other group is composed of older patients, in the middle or late teens, who have less cyanosis and disability and are often bright and intelligent, have done well at school, and are held back by their cardiac condition. In the first group it is of first importance to save life. Most of the patients in it are threatened with an early death unless they are relieved in some way by operation; they are quite unable to make any use of educational facilities and are unlikely to become useful citizens. Nobody can question the justification for using the Blalock–Taussig operation to relieve these patients; the operation is life-saving and confers great benefits in the relief of severe disability.

I am always more worried about the use of the Blalock–Taussig operation in the second group—not because it will not lessen cyanosis and disability and enable the patient to make full use of his educational and mental attainments, but because of the uncertainty of the later prognosis attached to the artificial ductus arteriosus. It is for this reason that I have always felt a lurking doubt when viewing the present good result after a Blalock's operation on these patients. It would be so much more satisfactory if there was not in the background the uncertainty that in another five to ten years serious effects of the artificial ductus arteriosus will appear. It would be much better if one could feel that a bright and intelligent boy or girl of 10–18 could be spared this doubtful future.

By direct operation on and relief of the obstruction in the pulmonary channel one might be able to achieve this, and I feel that this provides another powerful argument in favour of operative relief of the infundibular stenosis; certainly so in the older and less disabled group, but by no means excluding the more severe or most severe cases.

If these arguments are correct the advantages of direct operation upon the infundibular stenosis are manifest. I am happy to be able to state that the operation is certainly possible, because I have already performed it successfully in five cases. It is as yet too early to know whether there will be a tendency for the stenosis to recur, but up to now there seems to be progressive improvement rather than regression with the passage of months. The newly made wider channel seems to be progressively increased by the improved circulation; it is of course possible that the passage of years may tell a different story, but so far the results have been extremely encouraging.

The development of an operation of this sort must be based, among other things, on a clear conception of the surgical and pathological anatomy of the condition. A complete description of this is impossible here and must be dealt with in a separate report. It must suffice to say that there are considerable variations in the position and character of the stenosis, which may be placed a short distance below the pulmonary valves or as much as several centimetres lower down in the ventricle. Fig. 2 shows diagrammatically the position and form of most of the usual types; and Fig. 3 shows two types similar to those in Figs. 2*c* and 2*d* but with a muscular outer wall to the infundibular chamber. Especially important is the variety seen in Fig. 2*d*, in which the stenosis is situated low in the ventricle and there is a large infundibular chamber separated from the main ventricular chamber by a small ostium.

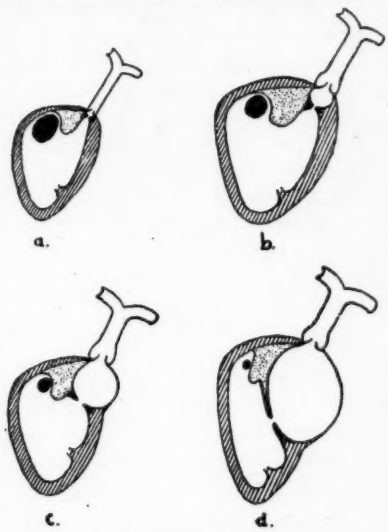

FIG. 2.—Diagrams illustrating certain forms of the commoner types of infundibular stenosis. In *a* there is a high degree of pulmonary hypoplasia with a bicuspid valve and stenosis lying just below the valve in a narrow muscular channel. In *b*, the commonest type, there is a high infundibular stenosis. In *c* there is a small infundibular chamber with a very thin fibrous wall. In *d* the thin-walled infundibular chamber is large.

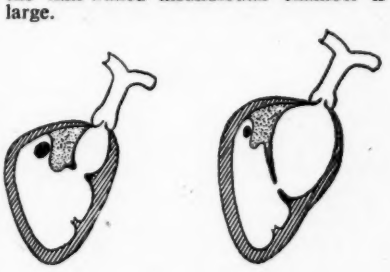

FIG. 3.—These two types are similar to those shown in Figs. 2*c* and 2*d*, except that the outer wall of the infundibular chamber is muscular.

This type is usually easily recognized radiologically before operation by a well-marked convex projection on the left border of the heart shadow just below the pulmonary artery; it is thrown into greater prominence in the right anterior oblique view, and the chamber itself is clearly demonstrated by angiocardiography. In view of the ease of recognition, and the considerable clearance below the pulmonary valves afforded for operative manipulations, this was the type chosen for the first resections. This resection was done by inserting a special punch through an incision in the wall of the right ventricle below the stricture. In some cases a finger has been passed into the heart, both to examine the local state of affairs more exactly and to dilate further the pulmonary canal. In one case finger dilatation was all that was done, and a good result followed.

A complete clinical account of the five successful cases will be given elsewhere in conjunction with Dr. Maurice Campbell.

In addition to these five successful cases there was one patient who died. This was a very blue woman aged 35 who, like all these patients over the age of 20, was an

extremely bad risk; an operative diagnosis of a valvular stenosis was made and a valvulotome was passed, although as soon as it was introduced it became clear that a more complicated condition existed. She died, and post-mortem examination revealed an infundibular stenosis situated just below the valves. Although not strictly an example of infundibular resection, it was felt that this fatal case should be included in the series.

Comment upon Direct Cardiac Operation

These direct operations upon the heart involve considerable anxiety, and many difficult and complex problems arise. This is not surprising, as they constitute virtually an entirely new field of surgical endeavour. Even more than in the case of the Blalock–Taussig operation they are definitely not for the lone operator, but demand the work and attention of an enthusiastic, loyal, and courageous team. Quite apart from the technical details of the actual operation upon the heart itself, there are the abstruse problems that arise in connexion with the avoidance or treatment of cardiac arrest or of the various severe arrhythmias that may occur during the operation; in addition there is the ever-present danger of temporary or permanent damage to the brain occurring as a result of arrest of, or interference with, the cerebral circulation. The various problems are being elucidated, and answers to them are being sought and found; progress is being made all the time, and we hope that the final results will justify the efforts. It is certain that by this means alone can we settle the question of the feasibility or otherwise of direct operations upon the heart for the relief of pulmonary stenosis.

It has been suggested that all this hard, anxious, and difficult work is scarcely justified for patients with congenital cyanotic heart disease, since so many of them are poor lives in any case and do not merit the effort. Morally, of course, this attitude is quite indefensible, but apart from this it must be emphasized that the issue is a far larger one and should be recognized as such. Although at present most of our efforts are being directed towards the surgical relief of congenital heart abnormalities, there is also the much vaster and more important field of the acquired heart lesions. Up to now very little has been achieved in their surgical relief, but the knowledge and experience gained by direct cardiac surgery for the congenital cases must help the development of successful operations for acquired heart lesions. We have, in fact, already at Guy's one successful case of the operative relief of post-rheumatic mitral stenosis.

Both these operations upon the heart itself and the indirect operations of the Blalock–Taussig type are tiring and anxious procedures, involving much care, responsibility, and hard work. Fortunately they have their happier side, and we are in large part recompensed for the long and difficult hours by seeing the almost miraculous change in the children themselves and in witnessing the joy and relief of the parents when they see their children running about happily and without effort like other children.

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SOME ASPECTS OF POLIOMYELITIS IN NEW ZEALAND

BY

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From the study of poliomyelitis in different parts of the world it seems apparent that the clinical picture of the disease varies from country to country and from time to time in a given locality. The occasional case of endemic poliomyelitis with a minimal prodromal illness and sudden onset of paralysis, as is common in the United Kingdom, is poles apart from the type of case which occurs in epidemic form in New Zealand, where there is a high mortality and the prodromal illness is often an acute influenza-like affair with marked muscle spasm. As a result, concepts of the disease and methods of treatment in the U.K. and those of New Zealand and the North American continent are widely divergent, and we have the paradox of skilled observers in the U.K. stating that they have never seen muscle tightness in poliomyelitis, whereas competent observers in other countries aver that muscle tightness occurs in every patient with poliomyelitis. Treatment has varied accordingly.

In the United Kingdom in the past, apart from occasional minor epidemics, the disease has been endemic, but there has been a rising incidence in the last two years, and it seems probable that poliomyelitis may be about to shed its cloak of endemicity and appear in full-dress epidemic form. Whether such a change is a result of a rising virulence or is due to the advent of a new strain of poliomyelitis is not yet apparent, but if severe epidemic poliomyelitis does occur in the U.K. it seems probable that the clinical picture will be different from what it has been in the past. In view of this it might be of value to place on record some aspects of an epidemic of poliomyelitis which occurred recently in New Zealand, where poliomyelitis has been endemic since 1887 but where in addition there have been major epidemics at regular intervals, as in 1916, 1925, 1937, and 1948 (Department of Health, New Zealand, 1938).

The New Zealand Epidemics

Seasonal Incidence.—In the recent epidemic in Auckland (population 354,000), 250 patients were admitted between November, 1947, and September, 1948 (Hughes, 1949), and thereafter occasional cases occurred up till April, 1949. The onset and main intensity of the epidemic occurred in the summer, in the first three months of the outbreak. Thereafter the epidemic smouldered for 14 months. Previous epidemics in New Zealand have occurred in the summer months, whereas in an epidemic among New Zealand troops in Egypt (Caughey and Porteous, 1946) the incidence was highest in the months of January and April, unlike that of other epidemics in the Northern Hemisphere, which tend to fall in the summer months, between July and October.

Age Incidence.—The 250 patients admitted comprised 188 children and 62 adults. A study of the age incidence of notified cases in this and previous epidemics (Table I) shows a steady increase in the incidence of patients over 16 years and a fall in the 0–5 age group, in keeping with the definite shift to the higher age groups noted in the poliomyelitis statistics of New York City and elsewhere.

TABLE I.—*Age Incidence in New Zealand Epidemics*

Age (Years)	1916		1924–5		1936–7		1947–8	
	Cases	%	Cases	%	Cases	%	Cases	%
0–5 ..	200	59·3	641	55·3	245	27·3	86	34·4
6–10 ..	65	19·3	273	23·6	291	32·5	70	28·0
11–15 ..	27	8·0	115	9·9	177	19·8	32	12·8
16 + (adult)	45	13·3	130	11·3	209	20·4	62	24·8

Age and Severity of the Disease.—Study of Table II shows that the severity of the disease was greater and the mortality rate higher in the older age groups, while the morbidity rate was higher among the younger age groups.

TABLE II.—*Age Groups*

Years:	Under 1	1–5	6–10	11–15	16+
No. of patients ..	6	80	70	32	62
Deaths	0	0	1	2	9
% mortality ..	0	0	1·4	6·3	14·5

Contact Cases and Multiple Cases.—For the correct assessment of "multiple" cases consideration must be taken of mild poliomyelitis (stage 1), but it is of interest to note that of those cases regarded as severe enough for admission to hospital 16 came from seven families. A nurse and a medical officer who were working in direct contact with patients developed the disease, and 17% of the patients admitted were known to have had contact with positive cases.

Severity of Disease in Relation to Onset of the Epidemic.—During the first three months of the epidemic the cases were more severe, with a more acute onset, greater febrile disturbance, marked muscle spasm, and more paresis. The incidence of respiratory paralysis and bulbar palsy was higher, as was the mortality rate, 10 out of the 12 deaths occurring in the first two and a half months of the epidemic. Thereafter the severity of the cases steadily declined, many presenting with a mild upset with muscle stiffness, and often with a normal spinal fluid.

Portal of Entry.—Interest in tonsillectomy as a possible portal of entry for poliomyelitis was stimulated by the report by Francis *et al.* (1932) of a family of five children in Ohio who all had tonsillectomy performed on the same day. All developed poliomyelitis a few days later and three died. From the outset of the epidemic in Auckland the local health authorities and doctors advised against tonsillectomy and nasal operations while the epidemic was raging. The first 125 patients admitted were studied with this matter in mind, and in no case could recent tonsillectomy be held to be a factor in the development of the disease. One patient had undergone a nasal operation several days before the onset of the disease, and one patient had had a tooth extracted two weeks before admission.

Clinical Manifestations

The clinical picture of acute poliomyelitis in the past has been divided into a pre-paralytic and a paralytic stage or into "abortive" and paralytic poliomyelitis. In this study we have found it convenient to regard the disease as developing in three stages: stage 1, a stage of "minor illness"; stage 2, a stage with evidence of muscle spasm, with or without changes in the spinal fluid; and stage 3, in which the disease has progressed to definite paresis.

Stage 1: "Stage of Invasion"; "Minor Illness" of Poliomyelitis; "Abortive" Poliomyelitis.—During the epidemic a large number of adults and children presented with evidence of a minor febrile upset lasting two or three days and then settling without residual upset. Paul, Salinger, and Trask (1932) investigated a group of these patients among household contacts of cases of undoubted poliomyelitis and studied comparable control homes. They found a high incidence of so-called "minor illness" in the positives as compared with the contacts, and in comparable communities the incidence of "minor illness" was six times more common where poliomyelitis cases were occurring. The "minor illness" took one of two forms—acute febrile illness with sore throat, headache, and vomiting, settling after 24 to 36 hours, or mild upsets referable to the upper respiratory or the gastro-intestinal tract, with "cold" or diarrhoea. An investigation was carried out on 12 of these patients, and in two the diagnosis of poliomyelitis was established by monkey inoculation of nasopharyngeal material.

In the New Zealand epidemic Thompson (1948) carried out a careful investigation to discover how the epidemic started and how much minor illness related to the poliomyelitis had occurred (*a*) among household contacts, (*b*) in other persons residing in the same neighbourhood, and (*c*) in those parts of the urban area least affected by the epidemic. The investigation showed that the epidemic was preceded and accompanied by a large number of cases of "minor illness" of varying severity characterized by fever, headache, sore throat, vomiting, and diarrhoea. The ratio of this suspect minor illness to positive cases was very high—300 to 1. These patients were seldom admitted to hospital. They presented with an illness more or less characteristic but not specific. Most of them were probably suffering from stage 1 poliomyelitis.

Stage 2: "Pre-paralytic Poliomyelitis"; "Abortive Poliomyelitis."—Of the first 224 patients admitted to hospital 114 were in stage 2 and had had the "minor illness" of stage 1, but in addition they had developed pain and stiffness of muscles of the limbs and back and showed evidence of muscle spasm but no paresis. In the earlier days of the epidemic this type of patient usually had changes in the spinal fluid, but in the later months many stage 2 patients had a normal spinal fluid.

Stage 3: Paralytic Poliomyelitis.—Of the first 224 patients admitted 110 had evidence of paresis—76 moderately severe and 34 severe, 12 of whom died.

Signs and Symptoms

Headache.—Headache was a common presenting symptom. In a previous epidemic among New Zealand troops in Egypt (Caughey and Porteous, 1946) headache occurred in 39 out of 40 patients. In the present epidemic 45.4% of the patients complained of headache, which was usually throbbing in character and generalized or frontal in situation; but the series contained a large number of children below 5 years old, which made accurate record-taking on this point difficult. In some, headache first appeared three days after the onset, and might have been connected with the invasion of the central nervous system. Vomiting accompanied the headache in 17.4%.

Fever.—A study of the temperature charts of 115 patients (31 adults and 84 children) shows that, in general, the temperature range was highest in cases in which death or severe paralysis occurred (Table III).

Most of the patients had been ill for a number of days before admission, making estimation of the duration of fever difficult. The duration of fever after admission tended to be longer in those with severe paralysis than in those with slight or no paresis.

TABLE III.—*Height of Fever and Relation to Mortality and Severity of Paralysis (115 Patients)*

	Cases	Range Max. T.	Av. Max.	In Hosp.	Total
Adults (31):					
Fatal cases ..	5	101·4–104·6° F. (38·55–40·3° C.)	103·1° F. (39·5° C.)	2	4
Severe „ ..	13	99–103·4° F. (37·2–39·7° C.)	101·8° F. (38·8° C.)	5·5	8·5
Mild „ ..	7	98·4–103° F. (36·9–39·4° C.)	100·1° F. (37·85° C.)	4·5	7
Non-paralytic	6	98·6–105° F. (37–40·6° C.)	102·6° F. (39·2° C.)	3	5·5
Children (84):					
Fatal cases ..	3	102–104·2° F. (38·9–40·1° C.)	103·1° F. (39·5° C.)	3	4
Severe „ ..	24	100–104·4° F. (37·8–40·2° C.)	102·2° F. (39° C.)	4·5	7
Mild „ ..	24	99·4–104·8° F. (37·4–40·45° C.)	101·7° F. (38·75° C.)	3·7	6
Non-paralytic	33	99·6–103·8° F. (37·55–39·9° C.)	101·5° F. (38·6° C.)	4·7	6·7

Evidence pointing to a gastro-intestinal invasion was scanty. Diarrhoea developed in 6.4% at the onset and vomiting occurred in 32%. In 20% there was complaint of sore throat and evidence of nasopharyngeal congestion, which might point to a respiratory-tract invasion.

Pain.—Discomfort in the form of aching muscles, sometimes amounting to pain, was often a feature in the acute stage of the illness; and pain on movement, palpation, or muscle-stretching was frequently severe. This discomfort caused irritability and exhaustion, and prevented sleep. It was relieved by hot packs in practically all cases.

Hyperaesthesia of Skin.—This was sometimes a feature in the early phase of the illness. One adult complained of tenderness of the calf, and on light massage the skin was found to be extremely tender. The latter persisted for two days, but tenderness of the muscle persisted for five days. No weakness developed, but the ankle-jerk was lost. A nurse on the fourth day of her illness was hyperaesthetic over the abdominal wall and lumbar region, and when admitted to the sick bay was found to have tenderness of the right deltoid and in the abdominal and lumbar muscles. An adult male noticed that when he rubbed the extensor surface of his left forearm "the skin tingled and felt as though it had been slightly burned." This hyperaesthesia persisted. In four days he developed weakness of the left arm, more pronounced in the flexor muscles of the forearm.

Muscle Spasm

When our means of examination for this sign was adequate we detected muscle spasm in 100% of patients. A careful search was made for muscle spasm by inspection and palpation and by taking muscle groups through their full range of movement in order to observe the effect of stretch. This examination was more easily carried out with the patient in shorts, lying on a plinth.

Muscles in a state of spasm were often very tender, and were firmly contracted, bringing about deformity such as head retraction, deviation or rotation of the head, elevation of the shoulder, lordosis or scoliosis, flexion at the knees, or plantar flexion of the foot.

Muscle spasm was induced by stretching the muscles. The spasm developed at the onset of a phase of painful stretch as though pain had set up an abnormally active stretch reflex. Electromyographic studies tended to confirm this (Caughey, in the press). Once spasm had developed, further stretch was prevented by pain and the degree of spasm. The common sites of muscle spasm were the extensors of the neck and back and the hamstring muscles, the trapezius muscle, the muscles round the shoulder girdle, the quadriceps, and the gastrocnemius.

Muscle spasm was aggravated by massage, premature weight-bearing or other unsuitable motor activity, exposure to cold, and infection such as virus influenza. It was relieved by heat: this will be discussed later.

Duration of the Pre-paralytic Period

The duration of this period is important from the point of view of prognosis regarding the onset of paralysis. In this epidemic it was estimated from the first sign of the disease, and the average was 4.7 days, with a range of 1–18 days. In a previous epidemic among adults in the Middle East the average was 4.6 days. Another useful guide to prognosis of paralysis was fever; it was found that while fever persisted prognosis in respect of paresis had to be guarded.

Stage 3: "Paralytic Poliomyelitis"

Apparent paresis in poliomyelitis may be due to muscle spasm, to reflex inhibition or involvement of the anterior horn cells, or to a combination of these. Much of the recovery from paresis which occurs after it has developed is due to removal of reflex inhibition and abolition of spasm.

The onset of paralysis at the height of the epidemic was usually heralded by muscle-tightness and pain, muscle fasciculation, and occasionally hyperaesthesia of the skin. The incidence of paresis was much higher in the early months of the epidemic. Reflexes were variable; in some patients they were exaggerated in the early stages of the disease, and at times were absent or reduced without paresis. Where deep reflexes were preserved in the presence of paresis, the weakness was usually due to reflex inhibition or muscle spasm.

As a rule paralysis was maximal within 48 hours of its onset—the weakness being localized to one muscle group of one limb—and at times there was generalized weakness, with or without a more local weakness. The paralytic cases could be divided into spinal, bulbar, and encephalitic groups, with considerable overlapping. In the spinal type the weakness more often involved the lower limbs and was usually asymmetrical. Transitory retention of urine occurred in some, but this invariably cleared up after a few days. In the bulbar cases the reticulum wherein lie the 9th, 10th, 11th, and 12th nuclei was at times picked out in pinpoint fashion so that cardiac and respiratory centres were partially spared while the 9–10 complex was affected, causing difficulty in deglutition, choking, and nasal regurgitation. In other bulbar patients there was early nasal regurgitation and a nasal voice; mucus accumulated in the throat, the nasopharynx and the palate became intensely hyperaemic, the pulse was rapid and temperature high, the blood pressure was low, the respirations were jerky and irregular, fasciculations developed about the face, there was cyanosis, and finally coma ensued, with death.

Five patients who were diagnosed as cases of polioencephalitis were seen among the children; they passed from the pre-paralytic stage into a comatose state. Recovery from the comatose state occurred in two to seven days, the patient being left with a residual paralysis of a limb or involvement of the cranial nerves, and twice there was no residual paresis, making the diagnosis uncertain.

Clinical Pathology

A study of the blood picture yielded little useful information. The total white blood cells ranged from 2,000 up to 20,000. In general it could be said that the cases with a high leucocyte count had a high polymorphonuclear count in the cerebrospinal fluid.

The cerebrospinal-fluid pressure was usually moderately high. The fluid at times was crystal-clear, but in cases in which the count was high it was slightly hazy or even turbid, and occasionally developed a fine fibrous clot on standing. The C.S.F. cell count was found to vary enormously, and ranged from 5 to 2,000 or more. In the first day or two there was usually a preponderance of polymorphs or, rarely, the cells were all lymphocytes. This was probably determined by the stage of the disease at which lumbar puncture was done. After seven or eight days the count usually fell and became entirely lymphocytic in type, and after two to three weeks it returned to normal. The height of the cell count was no guide to whether paralysis was likely to develop. The protein content at the outset was normal or slightly raised. In what has been described as the classical picture, the protein content rises as the cell count falls. This was not borne out in our experience: the average protein in 41 cases was 56 mg. per 100 ml., with a range of 12–174 mg. The glucose level was undisturbed and chlorides were unchanged. However, as with other aspects of poliomyelitis, the cerebrospinal fluid changes were variable, and paralysis occurred with a normal fluid, or, on the other hand, marked changes occurred in the fluid without paralysis.

Management of the Outbreak

When it seemed likely that the outbreak in Auckland would assume epidemic proportions the local health authority and the hospital made plans to handle the situation.

Health Department.—All practitioners were circularized and instructed in preventive measures, such as the avoidance of tonsillectomy, nasal operations, and teeth extraction. To this, in future, should be added detailed information concerning the diagnosis of the suspect minor illness (stage 1) and the importance of treating any such suspect "minor illness" by complete rest to avoid unnecessary aggravation of muscle spasm and paresis by activity during the pre-paralytic period.

In addition, a panel of doctors with experience of poliomyelitis was set up to screen all suspect cases before admission to hospital. Only in exceptional circumstances were patients admitted to hospital without first being examined by one of this panel. This kept the admission rate to hospital down to reasonable proportions and ensured that suspect illnesses were carefully handled.

Hospital Preparations.—Beds were set aside in the infectious-disease block; the number of these could be readily expanded. Convalescent wards were also set aside to which patients could be transferred after three to four weeks. The medical care of all patients was in the hands of a paediatrician and a neurologist, the orthopaedic surgeons and otolaryngologists being called in consultation if necessary. Ultimately patients passed to the care of the physician in charge of the physiotherapy department. Three Kenny-trained technicians were brought to the country to assist other physiotherapists in the management and treatment of patients. A number of lay women were engaged as "packers"; with instruction they quickly became efficient and rendered invaluable service.

Treatment

In the acute stage of the illness all patients were nursed on a firm flat mattress with a low pillow, and a small one under the knees, in a position of comfort, the feet up against a foot-board at the bottom of the bed. If necessary sandbags were used to control rotation of the legs, and the pressure of bedclothes was taken by a cradle. Apart from these measures no splinting was employed.

Hot Packing.—From the outset treatment was directed to the relief of muscle spasm. In severe cases full packs to the trunk and all four limbs were used. In less severe cases packs were sometimes applied to the part affected. Packs were made of fine woollen material cut suitably for each part. They were immersed in boiling water, were wrung dry in an extractor, were applied at high temperature, and were then covered with blanket material and pinned in position. An efficient extractor was an important adjunct to treatment, as packs could then be applied at high temperature without burning the patient. Packs were applied at hourly to four-hourly intervals, dependent upon the severity of the case. At night packing was stopped, although occasionally packs were then used for the relief of pain. In the event of excessive sweating in the packs, saline was given to avoid salt depletion. The results of this treatment have to be interpreted with caution, but certain benefits undoubtedly accrued. Patients who were unable to sleep on account of pain and restlessness were relieved of their discomfort and usually slept soundly after a day of hot packing. Muscles in a state of tightness were relieved of their spasm, and re-education and passive joint movement could be carried out almost from the outset. The skin remained in a healthy state and was soft and pliable; this was especially apparent in the skin of the chest wall in patients with severe intercostal and respiratory involvement.

Passive Movement.—This was usually begun one or two days after the onset of treatment. Joints were gently taken through their range of movement once or twice a day after muscle relaxation had been attained by hot packs. Where relaxation of a muscle group was incomplete after hot packing for several weeks more forcible stretching of the tight muscle group was carried out daily.

Re-education.—This was usually started after three or four days, dependent upon the severity of the illness. Any unaffected muscles were gently exercised, and affected muscles were trained in order to correct any reflex inhibition and disturbance of reciprocal innervation which may have arisen. Ambulation in general was begun as soon as possible, making free use of elbow crutches and giving careful instruction in walking.

Treatment of Patients with Respiratory Paralysis.—Having decided that a patient was likely to require treatment in a respirator, the sooner the step was taken the better. Such cases invariably were endangered by aspiration of fluid, food, vomitus, or mucus. If it was not possible to keep the throat clear by suction, tracheotomy was carried out, all fluids were stopped by mouth, and the patient was fed by the intravenous route, using glucose and saline and daily a bottle of protein hydrolysate or plasma. Prophylactic penicillin was given. By this means patients could tide over a week or two, by which time the general condition had often improved. We feel that these measures were life-saving on three or four occasions.

Results of Treatment

A review of the first 224 patients treated in this manner shows that the mortality rate was 5.4% (12 patients); 22 were severely paralysed, 76 moderately paralysed, and 114 had no paresis. Of the 76 moderately paralysed 64 had completely recovered and 5 were still moderately paralysed at the end of one year. At the end of nine months 5 were still moderately paralysed, and at the end of three months 2 were moderately paralysed. Of the 22 severely paralysed

8 were completely recovered, 7 still moderately paralysed, and 5 severely paralysed.

Hence out of 224 patients 12 died and after 12 months 32 (14.2%) still had residual weakness. The remainder had made a complete recovery.

It is a pleasure to express one's appreciation of Dr. Elizabeth Hughes, with whom I worked in this epidemic; Dr. Rowatt Brown, the Director of Physiotherapy; Dr. Hunt and Dr. Barker, and the house-physicians, physiotherapists, and nursing staff, whose skill and devotion made this work a pleasure.

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FAILURE OF AUREOMYCIN IN EXPERIMENTAL MELIOIDOSIS*

BY

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No satisfactory agent for the treatment of melioidosis has yet been described. The disease in its generalized form is almost invariably fatal, but recovery in cases with localized superficial abscesses in which serious constitutional symptoms were absent have been reported. These reports have recently been reviewed by Green and Mankikar (1949), who also summarize the literature relating to the treatment of melioidosis with sulphonamides and antibiotics, and describe experiments made with certain of the newer drugs.

The evidence suggests that sulphadiazine is the most promising of the sulphonamides, and that a full course of this drug should be given. Penicillin, in concentrations attainable in the blood, is ineffective, but may be of value for injection locally. Streptomycin and " polymyxin " have no inhibitory effect on *Pfeifferella whitmori*, but chloramphenicol in concentrations obtainable in the blood (60 μg. per ml.) is highly inhibitory *in vitro* and is suggested for clinical trial. No report of the effect of chloramphenicol *in vivo* is yet available.

Through the courtesy of Messrs. Lederle a quantity of " aureomycin " was made available to the Medical Research Council, and since there seemed to be no data relating to the use of this antibiotic in infections with *Pf. whitmori* it was considered worth while to carry out a small laboratory trial. The strain used had been isolated from an abscess of a severe human case of melioidosis.

*A report to the Medical Research Council.

In-vitro Tests

Tests of the inhibitory action of aureomycin *in vitro* were made by the method recommended by Paine, Collins, and Finland (1948). A series of tubes was set up, each containing 0.5 ml. of heart broth and a concentration of aureomycin falling from 200 μg. per ml. by twofold dilutions to 0.8 μg. per ml. To each tube was added 0.5 ml. of a broth culture of *Pf. whitmori* standardized by opacity to 10 million organisms per ml. The concentration of aureomycin now ranged from 100 μg. per ml. to 0.4 μg. per ml. A standard loopful from each tube was inoculated on the surface of an agar plate containing the same concentration of aureomycin.

Strains of *Str. pyogenes* and of *Bact. coli* (faecal type), regarded respectively as typical sensitive and resistant bacteria, were simultaneously tested in broth-tubes and on parts of the same plates. The tubes and the plates were incubated for three days at 37° C. The results are shown in Table I. It will be noted that *Pf. whitmori*, which was inhibited by 12.5 μg. per ml. of aureomycin in broth and by 6.3 μg. per ml. on the plate, lies more closely to *Bact. coli* in its sensitivity than to the haemolytic streptococcus. According to Schneierson and Toharsky (1949) levels of up to 2 μg. per ml. are attained in the blood four hours after a single oral dose of 500 mg. in healthy subjects, falling after 12 hours to levels of the order of 0.49 μg. per ml.

In-vivo Tests

Although the tests made *in vitro* did not show great promise, it was decided to make a trial of the antibiotic in experimental infection in guinea-pigs. The orthodox procedure in a trial of this kind would be to estimate the average lethal dose of the infecting strain with adequate numbers of animals, and to proceed to a trial of the therapeutic agent, observing treated and untreated animals inoculated with a suitable infecting dose. It was considered wise, however, to arrange in the first instance a small-scale trial which could be completed quickly. If aureomycin showed any promise a fuller trial would then be made. One advantage of this arrangement was that it reduced the number of persons required to handle the animals infected with *Pf. whitmori*, which is reputed to be a highly dangerous organism in the laboratory. A special animal-room was set aside and a technique devised to minimize the hazards associated with the possible development of ulcerative lesions and the scattering of infected litter.

As the virulence of the strain was unknown, nine different infecting doses, falling in decimal series from 500 million to 5 organisms, were injected in suspension in quarter-strength Ringer solution intramuscularly into the leg of groups of either four or two guinea-pigs (average weight, 400 g.). Half the animals in each group were treated by the intraperitoneal injection of aureomycin morning and evening. Treatment was started at the same time as infection and continued throughout the period

TABLE I.—*Sensitivity of Pf. whitmori, Str. pyogenes, and Bact. coli to Aureomycin*

Organism		Concentration of Aureomycin in μg. per ml.									
		100	50	25	12·5	6·3	3·1	1·6	0·8	0·4	0·0 (control)
Pf. whitmori	Broth	–	–	–	–	+	+++	+++	+++	+++	+++
	Agar plate	–	–	–	–	–	+	++	++	+++	+++
Str. pyogenes	Broth	–	–	–	–	–	–	–	–	–	+++
	Agar plate	–	–	–	–	–	–	–	–	+	+++
Bact. coli	Broth	–	–	–	+	++	++	++	++	+++	+++
	Agar plate	–	–	–	–	–	+++	+++	+++	+++	+++

Degrees of growth: +++, ++, +. No growth: –

of observation. The dosages, which varied from 1 to 4 mg., are shown in Table II. The time to death was recorded, and each animal was submitted to post-mortem examination.

TABLE II.—*Treatment with Aureomycin of Experimental Melioidosis in Guinea-pigs*

Infecting Dose of *Pf. whitmori*	Days to Death					
	Untreated		Treated			
			Daily Dosage of Aureomycin			
			1 mg.	2 mg.	4 mg.	
500,000,000	4	4	4	5	–	–
50,000,000	4	4	4	6	–	–
5,000,000	4	5	4	4	–	–
500,000	5	–	–	–	8	–
50,000	4	–	–	–	5	–
5,000	5	–	–	–	9	–
500	7	7	–	–	5	10
50	4	7	–	–	4	7
5	8	11	–	–	8	10

Aureomycin was given intraperitoneally in divided doses morning and evening beginning on the day of infection and continuing until all the animals were dead.

It will be observed that the strain proved to be of very high virulence. With the larger infecting doses death usually occurred on the fourth day, but with the smaller doses it might be delayed as long as the 11th day. The lesions observed were typical of experimental melioidosis, and consisted of a large abscess at the site of inoculation, suppuration of the regional lymph glands, general subcutaneous congestion, peppering of the liver and spleen with yellow necrotic areas, and multiple abscesses in the lungs. It is clear that there is little difference between the treated and the control group. There were no survivors in either group, and the slightly longer survival-time of some of the treated animals may well have been due to chance. The lesions in the treated animals did not differ from those in the controls, and the infecting organism was readily isolated from the spleen and glands.

Although it is possible that larger doses of aureomycin might have had some beneficial effect, the results of *in-vitro* tests do not suggest that this is probable, and the dosage and spacing were in fact the same as those found effective by other workers in the treatment of such infections as Weil's disease.

Summary

Pfeifferella whitmori was found not to be inhibited *in vitro* by concentrations of aureomycin lower than 6.3–12.5 μg. per ml. The course of experimental melioidosis in guinea-pigs was not materially influenced by treatment with aureomycin started at the same time as infection.

I have to thank Mr. B. Madge for efficient technical assistance.

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The biennial conference of the Transport and General Workers' Union recently carried a resolution (*Scotsman*, July 14) requesting the Government to keep all aspects of their administration under constant review, with particular reference to pensions and the National Health Service, with the object of introducing improvements on a progressive basis as and when opportunity offered. The national secretary of the union's Government and municipal group said they had informed the Minister of Health of instances where they knew that certain people had been taking advantage of the National Health Service to benefit themselves, their friends, and their poor relations.

INTRACTABLE PAIN*

BY

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It is impossible to embark on a discussion on pain without being brought up with a bump against the insoluble body–mind problem. All experience, of course, has its origin in sensory data. Sensation becomes perception; percepts are further elaborated into concepts; concepts cluster together to form ideas and ideational constellations; and all these events undergo mnemic engramatization—i.e., the formation of memory traces. So far, it will be noted, I have been able to summarize experience in psychological terms only, without any reference to the material apparatus involved in the process. Nevertheless it is a common habit of mind to think of pain in physical terms and to draw an artificial distinction between what one is pleased to call "real" and imaginary pain, oblivious of the fact that all pain, whatever its most peripheral source of origin, is in the final analysis a psychic event.

If the words "pain" and "suffering" are mentioned outside any given context it is impossible to decide whether mental anguish is meant or pain arising direct from the body; and this is not a case of one *noumen* or descriptive category being correct in one context and in another being used as an analogue. The term "pain" covers both kinds of experience with equal justification, indicating, I would maintain, that, phenomenologically and semantically, mental and physical pain are so closely allied as to be almost identifiable one with another.

If one is compelled to think monistically it is wiser to regard pain from the psychic aspect and to disregard its material substratum, and to reserve for consideration in neuro-physiological terms the *type* of pain experienced. One can talk of a burning sensation, a boring sensation, a sensation of weight or pressure, a shooting or radiating sensation, a vibrating sensation, and a host of other sensations, all of which can be registered as painful, but not necessarily so. What converts such a sensation into a pain is, in a specially narrow sense, psychic rather than somatic, whatever fibres conduct the original stimulus. In other words, pain is an emotional as well as a sensory experience. Pain divorced from its emotional component is very different from the total experience, as is well shown after leucotomy. The emotional appreciation of pain probably depends on intact memory and unimpaired foresight; therefore leucotomized persons may be said to feel pain in the same way as an undomesticated animal does. When we empathetically suppose that the experience of pain in humans and animals is identical, we are likely to be guilty of the pathetic fallacy.

I believe that there is another important difference between pain as a sensory experience and pain as an emotional one. Pain as sensation is correctly located in the somatic segment in which it is generated in accordance with intact neural pathways. Pain as an emotional experience depends for its localization on the nature and integration of the body-image, in Schilder's sense. When the body-image is fragmented, the strangest things may happen: for example, one paraphrenic patient of mine complained that he heard voices in his stream of urine, and that the experience was extremely painful.

*A paper read in the Section of Neurology and Psychiatry at the Annual Meeting of the British Medical Association, Harrogate, 1949.

Message of Psychogenic Pain

There is no need for me to say anything here of the biological purpose of pain, except to remind you that, regarded teleologically, pain is a message to the total organism that all is not well and that a new adjustment is demanded. When the message has been delivered and adequately interpreted, pain has served its purpose and should be eliminated by all the means in our power. Psychogenic pain, using the word "psychogenic" in its narrowest sense, has a similar message to deliver—namely, that all is not well with the psyche—but the correct interpretation of the message, once it has been projected on to the body-image, is more often than not a matter of some difficulty.

Psychogenic pain, therefore, is likely to go on and on like a telephone bell that nobody answers because no one knows how to answer the telephone except a few trained psychotherapists, many of whom unfortunately, instead of answering the 'phone intelligently, go on repeating, parrot-like, a few stock phrases such as: "I am sorry you have been troubled . . . by the Oedipus complex." It is for that reason that a severe pain which does not respond to analgesic drugs is likely to be psychogenic or emotionally overdetermined. On the other hand, a pain which is abolished by the subcutaneous injection of sterile saline is much more likely to be somatogenic, since physical pain, like any other sensation, is easily influenced by suggestion.

The terms "pains" and "penalties" go naturally together; in other words, there is a powerful emotional link between the ideas of suffering and of punishment. From this we can correctly adduce that the idea of pain is bound up with man's most primitive organization as a moral being. It is not only from sadistic motivations that people still cling so obstinately to the notion that corporal punishment possesses a value all its own.

The adult type of conscience is nothing more than the faculty of reason judging applications of moral values. However, there is another form of conscience which acts directly on the psyche—the unconscious conscience (i.e., the conscience with its roots in the unconscious, the *super-ego* of the Freudian schema). The super-ego, however speciously it may disguise itself, is archaic, ruthless, superstitious, pleasure–pain-governed, and swayed by Talion law. We are all influenced by our super-egos as well as by our conscience, but in mental health there is a reasonable degree of correspondence between these two regulators of conduct.

Problem of Guilt

All psychopathologists stumbled across the problem of guilt very early in their investigations. The very helpful concept of the super-ego was formulated by Freud with the idea of providing some kind of account of the "mechanics" of guilt and its resolution. Since few of us are saints—and, incidentally, the greatest saints have always been endowed with what the theologians call a "sense of sin"—the super-ego is constantly engaged in the task of restoring endopsychic harmony by means of "guilt-cancelling" devices. That is the reason, I think, why nearly all psychoneurotic symptoms are unpleasant (i.e., "painful" in the widest sense). I can think of no agreeable hysterical syndrome, with the possible exception of hysterical trance-states, and hysterical trance is amongst the rarest of psychic disorders. Even the habit of alcoholism, which is subjectively pleasant for the time being, is punished by agonies of alcoholic remorse and finally by painful social degradation.

Strangely enough, psychogenic pain as an isolated symptom of conversion hysteria is not very common. When it does occur it as often as not covers an underlying encapsulated psychosis. I well remember at the Cassel Hospital treating a man for the single symptom of agonizing pain in the tongue. I was successful in abolishing his pain by analytical methods, and patted myself on the back for my psychotherapeutic skill. I was less complacent when I heard that three months after he left hospital as a "cured" patient he committed suicide in a state of galloping involutional melancholia. Neurologists not uncommonly come across cases of psychogenic trigeminal neuralgia, and the patients have at one time or another been treated by injection of the Gasserian ganglion. In my experience it is often wiser to allow these people to continue with their pain rather than to seek to remove it by analytical psychotherapy. Some people require a hair shirt or need to go through life with peas in their shoes.

Another complication of pain, regarded from its psychic aspect, is that the differentiation between pleasurable and painful stimuli is very indeterminate and variable, and that the point where pleasure passes over into pain (and vice versa) is therefore by no means constant. When the pleasure taken in pain is sexually tinged, even though the sexual factor is repressed and hence unconscious, the term "masochism" is applied. Persons endowed with an asthenic attitude to life—usually schizothymes—are more inclined to exhibit masochistic tendencies; persons with sthenic temperamental attributes are potentially more sadistic.

We can see, then, that pain of purely central origin can perform two sets of psychobiological functions: (1) regulate the balance between guilt and innocence by (unconsciously) self-imposed punishment, and (2) satisfy the conflicting claims of the masochistic and sadistic components of the personality-structure. From this it follows, as has already been inferred, that by no means all cases of psychogenic pain respond well or should be submitted to psycho-analysis.

The persistence of psychogenic pain or the psychically determined perpetuation of pain that was originally somatogenic not infrequently covers an already established drug addiction. In other words, people stick to their pains in order to provide a subjective justification for continuing to take the drug to which they have become habituated. This consideration should make every doctor very cautious in prescribing analgesic drugs. Pethidine, it will be remembered, was ushered in with a great flourish of trumpets on the grounds that it was non-habit-forming. A few months later, reports were coming in of grave pethidine addiction. Our attitude to pain is for the most part ambivalent; we wish to suffer (unconsciously, it is true), and at the same time we jib at pain and seek to avoid it. This ability to have one's cake and eat it is well shown in states of religious ecstasy—e.g., in the case of dancing dervishes who cut themselves with knives—when self-injury is accompanied by analgesia.

It must be remembered that many pains which are primarily psychogenic are secondarily somatogenic. For example, the colic associated with spastic colon is innervated in the usual way through the autonomic nervous system, although the spasticity of the colon itself may be psychically determined. The pain associated with nervous dyspepsia is another example; and there are innumerable others. It is for that reason that there is no incongruity in or scientific objection to treating these states pharmacologically as well as psychologically at one and the same time.

Two Other Factors

There are two more psychological factors which ought, perhaps, to be considered in connexion with the psychology of pain: (1) the influence of the pattern of culture, in the anthropological sense, on pain tolerance, and (2) individual differences. In many cultures—North-American Indian, for instance—the ability to bear pain without psychomotor expressions of suffering is regarded as an essential virile quality; and it would seem that in days gone by few males failed to pass the test. Among primitive peoples most initiation ceremonies for young boys include the infliction of pain, such as circumcision without an anaesthetic; and the boys are not allowed even to whimper. It would appear, too, that the Russians and the Chinese are traditionally somewhat insensitive to pain and suffering of all kinds.

The converse is equally true: certain patterns of culture permit psychomotor extravagance in the presence of pain. This is true, I think, of Jewish and Latin peoples. This in no way implies a characterological weakness in the individual, who is acting in accordance with his traditional reaction-pattern. I have already inferred that an individual's personality-structure determines his attitude to pain. Evidence of individual differences is also provided by the study of the psychoses.

I remember one schizophrenic boy who attempted suicide in the most bizarre and painful way: he procured a pound of meat (it was in the days when meat was unrationed), let it rot until it stank, expressed the juice, and injected it into his liver with a large, blunt, rusty hypodermic needle. When I questioned him after the long and painful illness which followed he denied that he had experienced anything unpleasant, although his pre-psychotic temperament had been hyperaesthetic. In depressive psychosis physical pain is often welcomed as a counter-stimulus to mental anguish; and manic patients are often so insensitive to pain that they have to be protected from injuring themselves just for the fun of the thing.

Hypnosis

Paradoxically enough, psychiatry has more to offer in the alleviation of physical suffering than in the treatment of psychogenic pain. Pre-frontal leucotomy as a means of abolishing the emotional factor of the pain experience has already been mentioned; and I do not propose in the limited space at my disposal to discuss the advantages and disadvantages of this procedure. It is to the much-neglected practice of hypnosis that I would turn your attention.

The treatment of the psychoneuroses by hypnotism had no sooner come into its own than it was eclipsed by Freudian psycho-analysis and allied methods of therapeutic procedure. And yet hypnotism still has much to offer, especially in the treatment of pain. In my student days there was a boy in hospital suffering from severe osteomyelitis whose daily dressings were so painful that he required a general anaesthetic on every occasion. I obtained permission to hypnotize him, and found that he was susceptible to deep hypnosis. Afterwards he had painless dressings daily under hypnosis.

It is, however, to Salter's work in America that we must look for further advances, provided, of course, that his work can be confirmed and repeated at will. Salter (1944) rejects the views of the psycho-analysts, who regard hypnosis as an artificially induced hysteria, and who suppose that the hypnotist must be unconsciously identified with one or other of the parental figures and that the hypnotized person automatically regresses to a state of infantile dependence.

According to Salter the hypnotic trance itself and all hypnotic and post-hypnotic phenomena are nothing more than conditioned reflexes, and he builds up a very strong case to support this thesis. If Salter is right the hypnotist's "suggestions" are to be regarded merely as conditioned stimuli. There is thus no reason why a person should not be trained to provide his own conditioned stimuli, thereby eventually eliminating the need of a "hypnotist" and abolishing the somewhat mystical concept of *rapport*. Salter has, it would seem, elaborated methods of training people in autohypnosis—in other words, self-conditioning—which seem to be sound and relatively simple. He defines autohypnosis as "the ability to induce upon oneself the trance of sleeping hypnosis together with such of its phenomena as may be desired."

The advantages of autohypnosis over heterohypnosis are at once apparent: it is extremely useful for a person to be able at will to abolish existing pain (once its nature has been diagnosed), to cure himself of insomnia, to render himself completely deaf to disturbing noises, to increase his inclination to work, to eliminate stage-fright and other crippling forms of self-consciousness—and all this without having to establish a dependence on any psychologist.

In a world which is becoming increasingly totalitarian, when political-police investigators employ third-degree methods involving physical and mental torture as a matter of course, it may well be that the time has come for all Government "agents" to be trained "autohypnotists." Such an agent, when captured and "investigated," could make himself insensitive to pain of all kinds, could at will be deaf to all sounds, including the sound of his interviewer's voice, could send himself to sleep in all circumstances, and induce amnesia for matters which he did not wish to reveal in such a way as even to circumvent the use of "truth-drugs." It would indeed be extremely difficult, even with the most refined modern methods of "persuasion," to extract bogus confessions from political opponents.

Disregarding this last rather fanciful and sensational suggestion, it would at least seem that autohypnosis offers some people with intractable pain an easy and legitimate way out of their suffering without the necessity of having their brains pithed.

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Unesco proposes to publish later in the year a manual on the international exchange of publications. It intends to publish as an annex to this manual a classified list of institutions, including libraries, universities, scientific institutions, learned societies, etc., throughout the world, which are willing to exchange either their own publications or other publications which they have regularly at their disposal. Unesco has obtained a considerable amount of information concerning the availability of exchange material, but considers that it is still far from complete. All institutions which have so far not sent to Unesco details of their exchange material in one form or another are therefore asked to communicate immediately the following information to the Unesco Clearing House for Publications, 19, Avenue Kléber, Paris, 16e: (*a*) Name and full address of institution. (*b*) Exact titles of publications offered. (In the case of duplicates offered for exchange purposes actual lists of duplicates are not required, but only a statement that lists of duplicates are available. Institutions possessing a catalogue of their own publications available for exchange are asked only to send a copy of the catalogue or to give a full bibliographical description of the catalogue.) (*c*) Institutions which wish to exchange their publications only under certain conditions are asked to state what these conditions are. Only information which reaches Unesco before Oct. 1 can be used in the manual.

BANTI'S DISEASE

POSSIBLE RELATIONSHIP TO Rh FACTOR

BY

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Clinicians and research workers were quick to grasp the significance of the discovery of the Rh factors, and their combined labours have shed a flood of light on many hitherto perplexing problems. Not a little of the work was done in the Birmingham Children's Hospital, where Sir Leonard Parsons (1933) and his co-workers helped to establish the essential unity of icterus gravis, haemolytic anaemia of the newborn, and hydrops foetalis, and where the subject of kernicterus was investigated. Even before the role of Rh incompatibility in those conditions became known ever-increasing inquiries were being made into the possibility of haemolytic disease being at the root of other

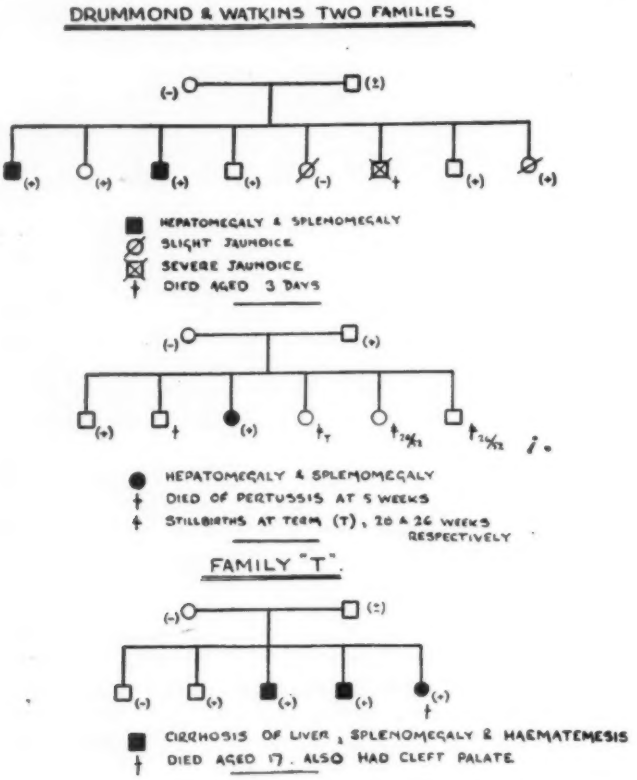
DRUMMOND & WATKINS TWO FAMILIES
HEPATOMEGALY & SPLENOMEGALY
SLIGHT JAUNDICE
SEVERE JAUNDICE
DIED AGED 3 DAYS
HEPATOMEGALY & SPLENOMEGALY
DIED OF PERTUSSIS AT 5 WEEKS
STILLBIRTHS AT TERM (T), 20 & 26 WEEKS RESPECTIVELY
FAMILY "T".
CIRRHOSIS OF LIVER, SPLENOMEGALY & HAEMATEMESIS
DIED AGED 17. ALSO HAD CLEFT PALATE
SQUARE DENOTES MALE, CIRCLE FEMALE (+) & (-) AFTER SYMBOL REPRESENTING SEX DENOTES Rh + & Rh - RESPECTIVELY. A HETEROZYGOUS INDIVIDUAL IS DESIGNATED AS (±)

FIG. 1.—Genealogical tree of Drummond and Watkins's two families and of Family T.

ills which befall mankind, and now they include studies of the genetic make-up of families of imbeciles and mental defectives, those with chorea-athetosis, Wilson's disease, and congenital obliteration of bile ducts, and of some individuals showing enlargement of liver and spleen.

No convincing proof has so far been found that either mental defect in the broad sense or Wilson's disease is caused by Rh incompatibility; but Skelton and Tovey (1945) reported congenital obliteration of the bile ducts in association with haemolytic disease. It is generally known that in severe haemolytic disease of the newborn, in addition to jaundice, there may be an enlargement of liver and spleen, and that this enlargement may persist for some time after the jaundice has subsided. It is therefore natural that when we find young patients with enlargement of the liver and spleen of seemingly unknown aetiology we should ask ourselves whether Rh incompatibility may not have had something to do with it.

No doubt this question has occurred to many clinicians, but, surprisingly enough, only one paper could be found in which an endeavour was made to answer it. Drummond and Watkins (1946) record three families with hepatomegaly and splenomegaly. They make it clear that in only two of these families could the Rh factor have played a part, and for the sake of brevity the main details of these are summarized here in the form of family trees (Fig. 1). Drummond and Watkins state that in neither of their families did the mother have a transfusion, and one is struck straight away by the fact of the firstborn being affected in No. 1 family, while the disease, after skipping the next Rh-positive child, caused the same condition in the third one, and thereafter was probably responsible only for the death of the sixth child. Family No. 2 conforms more with our conception of how Rh incompatibility works—the first one or two, in this case two children, being responsible for sensitizing the mother and seemingly escaping, while those who follow bear the brunt of the disease. In both these families the mothers had no Rh antibodies when examined, but suffered severe reactions when transfused with 50 ml. of Rh-positive ABO compatible blood, and subsequently showed abundant Rh antibodies.

Details of Family T.

In the family about to be described the possibility of Rh incompatibility playing a part in the incidence of hepatomegaly and splenomegaly stands out even more clearly. The genetic make-up of the family for the various blood groups is set out in the accompanying table.

Table Showing the Various Blood Groups of Family T.

Name	Age	Group	Antisera				Rh Genotype	M	N	P
			C	D	E	c				
Father ..	52	A	+	+	−	+	CDe/cde	+	+	−
Mother ..	51	A	−	−	−	+	cde/cde	−	+	+
Arthur ..	28	A	−	−	−	+	cde/cde	+	+	+
John ..	26	O	+	+	−	+	CDe/cde	+	+	+
Frank ..	23	A	+	+	−	+	CDe/cde	+	+	+
Edward ..	19½	A	+	+	−	+	CDe/cde	+	+	+
Kathleen ..	17	A	+	+	−	+	CDe/cde	+	+	+

Here, then, an Rh-negative woman, who had never had a transfusion, married a heterozygous Rh-positive man and had five children. The parents, who have been examined, are normal clinically. The first child of the marriage, Arthur (28), who is Rh-negative, is perfectly normal. The next one, John (26), is Rh-positive, and he too is normal, which is quite understandable considering he must have been the first in a position to sensitize his mother against the D antigen. The next three children, all Rh-positive, revealed enlarged spleens and palpable livers, and their more detailed history is as follows.

Case 1

Frank, now aged 23, was sent to the Children's Hospital, Birmingham, in 1936 on account of abdominal discomfort. There his liver was found to be moderately enlarged, firm, and smooth, and his spleen very large. Liver-function tests were within normal limits, he was not anaemic, and his white blood count was normal—8,000 (71% polymorphs, 1% eosinophils, 1% basophils, 14% lymphocytes, 13% monocytes).

A diagnosis of Banti's disease was made, and later in the same year he was readmitted for splenectomy. Dr. H. S. Baar very kindly looked out the original sections of the spleen, and his comment on them and on those of the other two affected sibs is that they are typical of Banti's disease.

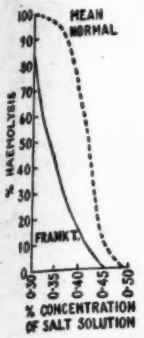

FIG. 2.—Graph showing decreased fragility of red cells in Case 1.

This lad remained well for over a year after the splenectomy, and early in 1938 he was admitted to this hospital following his first haematemesis. A second haematemesis at the end of 1938 necessitated a blood transfusion. In all he was admitted on ten occasions because of haematemeses, the last one being in April, 1949. At no time, however, was his condition really desperate, and transfusion had to be carried out on only three other occasions. Liver-function tests which were repeated here showed no evidence of serious dysfunction.

Examination of his blood and urine did not point to any excessive haemolysis, and in fact there was a small but significant decrease in the fragility of the red cells (Fig. 2), a point also noted by Drummond and Watkins (1946) in their patients. His white cell and platelet counts were within normal limits, too. This patient's liver is now only just palpable and he himself is reasonably well and earning a living as a bakelite moulder.

Case 2

Edward, now 19½, was brought to this hospital in August, 1938, following his first haematemesis. His spleen was appreciably enlarged, while the liver exceeded the normal limit only slightly. Again Banti's disease was diagnosed. This boy's bleeding and clotting times and his white cell count were normal. In September, 1938, Mr. James Gore performed a splenectomy on him; recovery was uneventful. The pathologist's report states: "The spleen shows fibrosis extending through the organ, slight thickening of capsule, and dilated sinuses. Hyaline swelling present in endothelial layers of the vessels of the Malpighian bodies."

Fifteen months after splenectomy this patient had a further haematemesis, and by July, 1948, he had had eight haematemeses in all. He also showed remarkable recuperative powers, though at one time in 1945 his condition was critical. His liver-function tests were normal, too, and he showed no evidence of excessive blood destruction.

Case 3

I saw Kathleen, the fifth child, for the first time in October, 1947, when her brother Frank was an in-patient with haematemesis. It was then that I began to make tentative inquiries into the possibility that we were dealing here with a familial affection due to Rh incompatibility. Clinical examination of the girl revealed an enlarged spleen and a cleft palate but no anaemia. Till then she had never had any overt bleeding, and although somewhat delicate was able to work as a box-maker.

She was not seen again till June 27, 1948, when she was brought into hospital as an emergency case following haematemesis. Her blood count showed 8.4 g. % Hb, 3,220,000 red cells, 5,100 white cells, with 64% polymorphs. At first her condition did not give rise to anxiety, but on July 2 she rapidly became very ill following a severe melaena and haematemesis. There was a temporary rally after a transfusion of 3 pints (1.7 litres) of blood, but next day she collapsed again and became almost moribund. A further 3½ pints (2 litres) of blood was given, but profuse melaena continued and she died on July 4.

Post-mortem examination showed varices at the cardio-oesophageal junction, and on the greater curvature of the stomach about 1 in. (2.5 cm.) from the cardiac sphincter an acute ulcer which had eroded one of the dilated veins. The mucosa round the ulcer was injected, but, apart from this and much altered blood in the small intestine, no other abnormality was found in the gut. The spleen, which weighed 13¼ oz. (383 g.) and was about 6 in. (15 cm.) long, contained localized patches of fibrosis in the capsule, and was partly adherent to the diaphragm. Its pulp was beefy and showed an increase in fibrous tissue. The liver, which weighed 45 oz. (1,276 g.), had a finely granular surface. It showed great increase in fibrous tissue, grey strands of which were visible to the naked eye. Sections of the liver and spleen are shown

FIG. 3.—Section of liver in Case 3, showing cirrhosis.

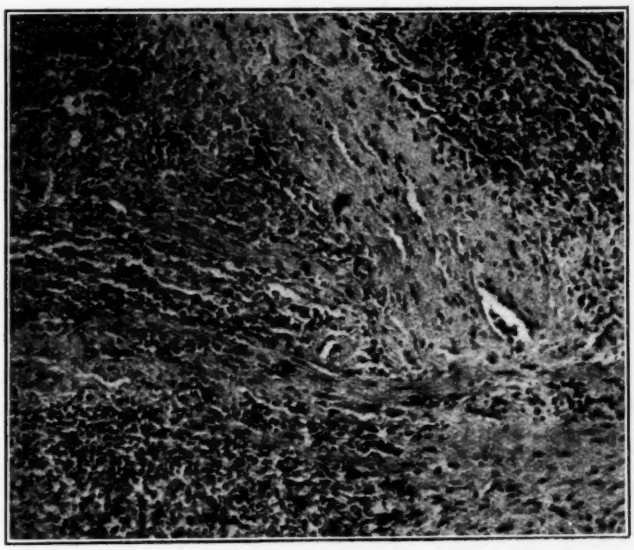

FIG. 4.—Section of spleen in Case 3, showing fibrosis.

in Figs. 3 and 4. No other gross abnormalities were found, and in particular the basal ganglia of the brain showed no degenerative changes.

Discussion

The parents in our family never noticed any jaundice in their children either at birth or subsequently. This is in conformity with the findings in the cases of Drummond and Watkins (1946), and does not, of course, rule out the possibility that a considerable degree of neonatal anaemia may have been present in these patients. In this connexion it is worth recalling the statement by Vaughan (1946), who found no correlation between the incidence of kernicterus and the degree of blood destruction—in other words, the symptoms we associate with kernicterus may occur in children who have never been jaundiced. This too was

pointed out long ago by Sir Leonard Parsons and his associates.

All this raises the question whether Mollison *et al.* (1948) are right in maintaining that the evils which flow from Rh incompatibility can be put down to the effects of blood destruction or whether the Rh antibody is able to fasten on fixed somatic cells and wreak damage there. Support for the second view is given by Boorman and Dodd (1943), who have shown that the Rh factor is a general characteristic of many tissues, and consequently many if not all tissues are likely to be susceptible to injury by Rh antibodies. The Birmingham school (Baar, 1946) also produced evidence of what we may term primary hepatic damage by Rh antibodies.

Another point of interest is that the mother of our patients showed no Rh antibodies and failed to produce them after an injection of 0.05 ml. of Rh-positive blood obtained from one of her sons, but showed them after injection of 5 ml. of her husband's blood. Something similar was found by Drummond and Watkins (1946), and the assumption is that the antibodies which the mother had originally died out with the passage of time, only to reappear under suitable stimulation. On the other hand, Gerrard (personal communication, 1949) found blocking antibodies in a woman 18 years after she had given birth to a child with icterus gravis. The child concerned died of cirrhosis of the liver at the age of 3½, and the case was reported by Braid and Ebbs (1937).

If, from the fate of my patients, I may be allowed to draw any conclusions about the outlook in similar cases, I may be tempted to say that splenectomy improves the prognosis, but cannot be sure that this is the case when I recall that Frank did not bleed until after his splenectomy, and that Kathleen's death was almost certainly the result of a fortuitous gastric erosion superimposed on a dilated vein. Whitby and Britton (1946), however, are of the opinion that splenectomy influences the prognosis favourably. It may be that in future instead of a simple splenectomy some form of porto-caval anastomosis will be undertaken in similar cases.

The three patients described, though they showed no leucopenia or progressive anaemia, would qualify for inclusion in the so-called Banti's syndrome. What Banti (1894, 1910) had in mind when he described the disease to which he gave his name is not absolutely plain, and subsequent commentaries have not helped to clarify the issue. It has been obvious for some time, however, that the name Banti's syndrome has been used as a cloak for a variety of diseases. It may be that further work will sort out one of the entities lumped together under the title of Banti's disease by confirming that fibrosis of the spleen and liver, with enlargement of these organs, and especially of the former, occurring in the young and young adults and accompanied by a tendency to haematemesis, is at times due to Rh incompatibility.

Summary

A family is reported in which three out of five sibs were affected with hepatomegaly and splenomegaly and a tendency to haematemesis.

Reasons are given why this may have been caused by Rh incompatibility.

It is suggested that the condition observed may eventually be segregated from the Banti syndrome.

Grateful thanks are due to Dr. W. Weiner, Director of the Midland Region Blood Transfusion Service, for details of the table setting out the various blood groups of family T. and for his helpful advice; and to Dr. H. S. Baar for his opinion on the pathological sections.

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MIKULICZ'S SYNDROME

BY

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A considerable number of cases of combined lacrimal and salivary glandular enlargement have been reported since Mikulicz (1888) first described the syndrome which now bears his name. Nevertheless the condition is rare enough to prompt the recording of a recent case seen in the Western Infirmary, Glasgow. Since this hospital was opened in 1873 there apparently have been only two other in-patients in whom this diagnosis has been made, both in 1936. On fuller investigation, however, it seems that neither showed enlargement of the lacrimal glands, and their cases can hardly be considered to fall into this syndrome. One was a boy aged 7 with acute myeloid leukaemia and moderate enlargement of the salivary glands, and the other a man of 26 who had bilateral parotid enlargement but no other abnormality. It would seem, therefore, that this is the first case of Mikulicz's syndrome to be seen, at any rate as an in-patient, in the Western Infirmary in 75 years.

Case Report

The patient, a man aged 73, was admitted for the first time on Sept. 30, 1947, complaining of swellings in front of both ears, under the lower jaw, and above both eyes. These had appeared gradually over a period of 12 months, and for a month before admission vision had been much impaired by the presence of the large supraorbital swellings. Apart from these swellings there was no complaint, and the patient had given up his job as a forester only on account of difficulty in seeing. He could remember no previous illnesses. Both parents died when over 90, and all siblings had survived to similar ages.

Examination revealed a well-built healthy-looking man. The most striking abnormality was the symmetrical enlargement of all salivary and both lacrimal glands (Fig. 1). Chemosis of the conjunctivae of both upper lids was present, but neither xerophthalmia nor xerostomia was a feature. In addition there was generalized enlargement of all groups of

FIG. 1.—Appearance on Oct. 6, 1947—before treatment.

superficial lymph glands and also of those of the mediastinum as shown on *x*-ray examination of the chest. The superficial glands ranged up to ½ in. (1.25 cm.) in diameter and were moderately firm, mobile, discrete, and painless. The spleen was enlarged to 4 in. (10 cm.) below the costal margin.

Blood examination (see Table) showed normal values for haemoglobin, erythrocytes, and total leucocytes, but a neutropenia and lymphocytosis were features of the differential count

Table of Blood Findings

Date	Hb (g.%)	P.C.V. (%)	R.B.C. (10^6)	W.B.C.	Neut. (%)	Eos. (%)	Bas. (%)	Lymph. (%)	Mon. (%)
30/9/47	14·0	40·0	5·42	3,500	33·0	2·0	1·0	55·0	9·0
16/10/47	13·0	39·0	—	6,800	42·0	1·0	0·5	46·5	10·0
30/10/47	12·9	40·0	—	6,200	35·0	0·5	0·5	60·0	4·0
4/11/47	13·9	41·0	—	7,200	42·0	3·0	1·0	51·0	3·0
26/11/47	13·2	38·0	—	4,080	59·0	0	0	29·0	12·0
6/2/48	14·4	43·0	4·59	6,240	62·5	0	0·5	29·0	8·0
13/4/48	12·0	40·0	4·91	5,840	39·5	1·5	0·5	53·0	5·5
20/4/48	12·5	39·0	4·65	6,440	37·5	3·5	0·5	54·0	4·5
19/5/48	13·4	41·0	4·51	6,080	38·0	0	0·5	57·0	4·5
18/8/48	12·2	38·5	4·72	5,240	36·5	1·0	0	59·0	3·5
26/8/48	12·5	42·0	4·63	6,600	34·0	0·5	0	57·0	8·5

before treatment. Sternal-marrow examination revealed normal erythroid and myeloid series with possibly a slight increase in lymphocytes. The Wassermann reaction was negative. The erythrocyte sedimentation rate was never more than 5 mm. in one hour by Wintrobe's method. Plasma protein levels were albumin 4.04 g. %, globulin 1.81 g., and fibrinogen 0.47 g.

A lymph-gland biopsy was carried out and Professor D. F. Cappell reported as follows : "The lymph node shows general overrunning of the architecture with small lymphocytes, which infiltrate the capsule and extend from the hilum into the surrounding fat. Only traces of a follicular structure are identifiable. The condition is one of the ill-defined systematized lymphoid hyperplasias. The association with lacrimal and parotid enlargement suggests Mikulicz's disease, of which the lymphoid form is one variety. It would not be surprising if this condition terminated with lymphatic leukaemia."

Following this report an attempt was made to alleviate the patient's main symptoms by deep *x*-ray therapy, applied both generally and locally. Within a fortnight of beginning treatment there was obvious diminution in the size of the salivary and lacrimal glands and to a smaller extent of the cervical lymph glands. By Nov. 29 there was very pronounced regression of salivary (especially parotid) and lacrimal glands, but the spleen and lymph glands were not greatly altered. The patient was discharged at this time.

When seen again on Feb. 6, 1948, he looked and felt extremely well. Lacrimal and parotid glands were no longer visibly enlarged (Fig. 2). The submandibular glands were still palpable and the spleen and lymph glands unchanged. Blood examination showed essentially normal values, the previously noted lymphocytosis having disappeared.

FIG. 2.—Appearance on Feb. 6, 1948—three months after first course of treatment.

The patient was seen again on April 12 ; there was then moderate recurrence of the swelling of both lacrimal and submandibular glands. Neither parotid was palpably enlarged and the condition of lymph glands and spleen was unaltered. Blood examination showed a slight fall in haemoglobin and a return of the lymphocytosis, although the total white count remained normal. A further sternal-marrow examination, however, showed gross infiltration with lymphocytes, which comprised about 90% of the total nucleated count. *X*-ray therapy was reinstituted on April 14, and a month later complete regression of lacrimal and submandibular glands had taken place, but other findings, including the leucocyte picture, remained unchanged.

By Aug. 17 there had been sufficient recurrence of the lacrimal swellings to cause difficulty in seeing, and the patient was readmitted. An interesting feature on this admission was the presence of considerable swellings in both lower eyelids, presumably consisting of lymphoid tissue. These swellings were some distance from the free margin of the lids and appeared to be close under the skin ; they were certainly not connected with the tarsal glands. Parotid glands were visible and palpable but not grossly enlarged. The submandibular glands could not be felt. Lymph glands generally were still enlarged and the spleen now reached 6 in. (15 cm.) below the costal margin. Otherwise there was no change and the patient felt and looked well. Blood examination showed values for haemoglobin, red cells, and total white cells to be still within normal limits, though the differential white count showed a persistence of the lymphocytosis and neutropenia that had been a feature of previous examinations. A further sternal-marrow film showed the presence of large numbers of lymphocytes, comprising some 95% of the total nucleated cells.

Further local *x*-ray therapy resulted in rapid regression of the swellings around the eyes, but the lymphocytosis persisted. It may be remarked here that the only occasion on which this latter feature was modified by treatment was during the initial course of *x*-ray therapy, when the whole body was irradiated.

The patient was discharged to his home on Aug. 26, and thereafter his general condition seems to have deteriorated fairly rapidly. He was confined to bed from mid-September and died on Sept. 27. His practitioner, Dr. W. D. McLellan, wrote to say that the lacrimal and parotid glands remained of normal size, but there was a rapid and enormous increase in the size of the spleen, which became very tender. Cough and a blood-stained sputum became troublesome symptoms, and there were signs of an increase in size of the mediastinal glands, with collapse of the left lung and a pleural effusion. Blood examination could not be made and a post-mortem examination was not possible ; it cannot therefore be said with any certainty that he developed a terminal leukaemic phase, but such an event seems not improbable.

Discussion

Various classifications of Mikulicz's syndrome have been proposed, notably those of Howard (1909), Thursfield (1914), and Schaffer and Jacobsen (1927). Howard's classification, based on four personal and 51 reported cases, has the merit of simplicity, all cases being divided into three groups: (1) Mikulicz's disease proper, (2) pseudo-leukaemia, and (3) frank leukaemia. Thursfield, who described only one case, made an intensive study of the literature and put forward a scheme differing somewhat from Howard's and including tuberculosis, syphilis, and gout as aetiological agents. Schaffer and Jacobsen, with personal experience of ten cases, proposed a classification into Mikulicz's disease (familial and acquired) and Mikulicz's syndrome (due to leukaemia, tuberculosis, syphilis, lymphosarcoma, toxic agents, gout, and other diseases).

The study of these and numerous other papers reporting solitary examples leads to the conclusion that Mikulicz's syndrome is a manifestation of a general involvement of lymphoid tissue rather than a disease of the lacrimal and salivary glands themselves. The involvement may be due to lymphatic leukaemia, but in many cases, as in the present one, there has been only a moderate lymphocytosis in the blood or no deviation at all from normal. It would appear likely that many of these will eventually develop the full picture of chronic lymphatic leukaemia. In the present case, despite the development of a grossly abnormal marrow picture, the peripheral blood showed only a slight absolute lymphocytosis even after a course of at least two years.

Many, if not all, examples of this syndrome described in the past as being due to tuberculosis (e.g., Garland and Thompson, 1933) would probably now be classified as examples of sarcoidosis, while a study of the clinical features of those ascribed to syphilis leaves the impression that in many the syphilitic state may have been purely coincidental. Why Mikulicz's syndrome should be so rare when the pathological states which give rise to it are relatively so common does not appear to have been explained.

Summary

A record is presented of the findings in a case of Mikulicz's syndrome (enlargement of lacrimal and salivary glands) followed from the initial hospital admission until death 14 months later. Many of the features of chronic lymphatic leukaemia, including lymphocytic infiltration of the sternal marrow, were present, but the total leucocyte count was not raised during the period of hospital observation. Swelling of the lacrimal and salivary glands was treated by *x*-ray therapy with satisfactory though temporary results.

Brief reference is made to the more important literature on the subject.

I should like to express my thanks to Professor J. W. McNee, in whose wards the patient was investigated and treated, for permission to publish this account, to Professor D. F. Cappell for permission to include his report on the gland section, and to Miss M. M. Todd for the photographs.

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A SIMPLE EMERGENCY METHOD FOR ESTIMATION OF BLOOD SUGAR*

BY

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AND

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A simple and accurate method for estimating blood sugar, either in the ward or in the patient's home, has long been required. The technique of Haslewood and Strookman (1939) as described by King (1946), when used in conjunction with some simple apparatus we have designed, would seem to satisfy these criteria. This apparatus can easily be made by any competent glass-blower. No colorimeter or photometer is necessary.

Apparatus

The following apparatus is required: (1) a number of clean and dry teat-end pipettes; (2) one blood pipette calibrated to contain 0.1 ml., for measuring the blood sample; (3) one pipette calibrated to contain 0.2 ml., for measuring the solution of 10% w/v sodium tungstate; (4) a 1-in. (2.5-cm.) glass funnel and a supply of 5.5-cm. Whatman No. 41 filter papers; and (5) four tubes as shown in the accompanying diagram.

Tube A has an internal diameter of approximately 10 mm. and is calibrated to contain 3.7 ml. It is fitted with a rubber bung.

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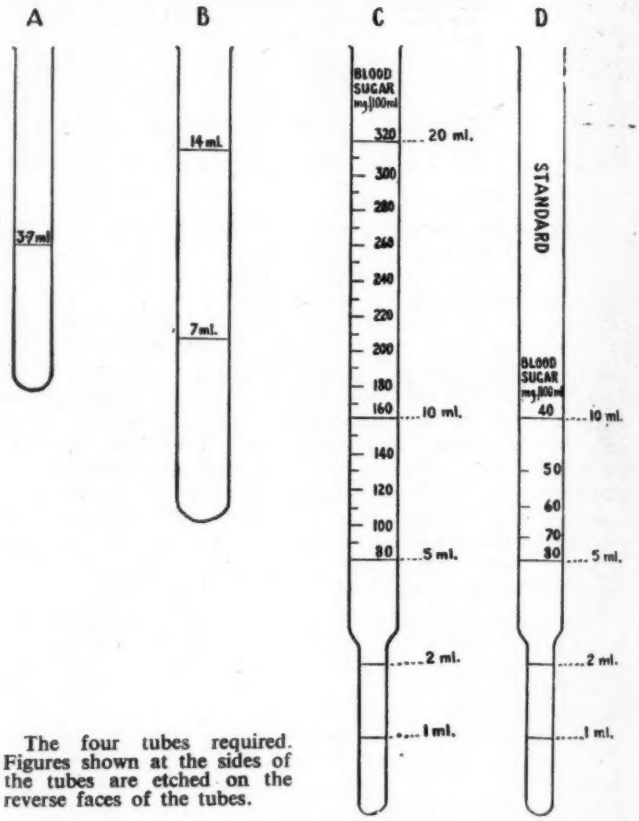
Tube B has an internal diameter of approximately 13 mm. and is calibrated to contain 7 ml. at the lower mark and 14 ml. at the upper. It is fitted with a rubber bung.

Tube C has a narrow portion approximately 5 cm. long with an internal diameter of approximately 8 mm., and a wider portion approximately 16 cm. long with an internal diameter of approximately 13 mm. It is calibrated by ring markings to contain 1, 2, 5, 10, and 20 ml. The length between the 5- and 20-ml. calibrations is further subdivided into 24 equal portions by alternate short and long etched lines. The long lines from below upwards are marked 100,



The four tubes required. Figures shown at the sides of the tubes are etched on the reverse faces of the tubes.

120, 140, and so on up to 320, which coincides with the 20 ml. mark. These markings represent mg. of glucose per 100 ml. of blood.

Tube D is similar to tube C and of identical measurements. It also has ring calibrations at 1, 2, 5, and 10 ml., the length between its last two markings being subdivided into four portions. These are determined by adding calculated volumes of water, namely:

At calibration	70	the tube contains a total volume of				5.7	ml.
,,	,,	60	,,	,,	,,	,, ,, 6.7	ml.
,,	,,	50	,,	,,	,,	,, ,, 8	ml.
,,	,,	40	,,	,,	,,	,, ,, 10	ml.

Solutions Required.—These are exactly as described by King (1946). The standard solution contains 2 mg. of glucose per 100 ml. and is prepared fortnightly by suitably diluting the stock solution containing 0.1 g. of glucose per 100 ml. with saturated benzoic acid.

Method

Tube A is filled to the mark with the isotonic sodium-sulphate–copper-sulphate mixture by means of a teat-end pipette. Blood obtained by capillary puncture is collected in a tube of internal diameter about 8 mm., which contains a small quantity of neutral potassium oxalate to prevent coagulation.

The 0.1-ml. blood pipette is filled to the mark with this blood and the outside of the pipette carefully wiped free of blood with clean cotton-wool. The measured quantity of blood is delivered into the solution in tube A and the inside of the pipette rinsed into the solution by sucking some of the fluid into the pipette up to the mark and then blowing it back again. This is repeated twice. Tube A is gently shaken to ensure thorough mixing, and 0.2 ml. of 10% sodium tungstate is added. The tube is closed with a rubber bung and inverted several times to get thorough mixing. After standing a few minutes the precipitate which forms is filtered off through a dry 5.5-cm. No. 41 Whatman filter paper. Tube C is filled to the 1-ml. mark with this protein-free blood filtrate and tube D to the same mark with the standard glucose solution. For each of these manipulations separate teat-end pipettes are used which are long enough to deliver direct into the narrow ends of the tubes.

The alkaline copper solution is now prepared by filling tube B to the lower mark with solution A and adding solution B to the upper mark. Again teat-end pipettes are used. The tube is closed with a rubber bung and shaken well to ensure mixing. Tubes C and D are further filled to the 2-ml. mark with the alkaline copper solution so prepared, using a clean teat-end pipette. The tubes are carefully shaken to ensure thorough mixing, are placed in boiling water for exactly 10 minutes, and then rapidly cooled by immersion in a relatively large volume of cold water or under the tap. Both tubes are filled with the phosphomolybdic reagent exactly to the 5-ml. mark, the open end is closed by the thumb, and the contents are mixed by inversion. The small amount of fluid adhering to the thumb is restored to the tube by wiping the thumb across its edge.

If the blood sugar is above 80 mg. per 100 ml. the blue colour in the wide portion of tube C below the 5-ml. mark will be darker than that in tube D. In this event small quantities of distilled water are added to tube C and the contents mixed by inversion after each addition, using the thumb technique already described. When the two colours match, the level of the bottom of the meniscus in tube C indicates the blood sugar. If the level has reached the top mark (320 mg. per 100 ml.) and the colour in tube C is still darker than that in tube D, the former tube is emptied exactly to the 10-ml. mark and further diluted until correct matching is obtained. In this case the final reading obtained must be doubled in order to give the correct blood sugar. In this way values up to 640 mg. per 100 ml. of blood can be determined. For higher levels the tube is again emptied to the 10-ml. mark and the final reading multiplied by four.

If the original blue colour in tube C is lighter than in tube D the blood sugar is less than 80 mg. per 100 ml. It can be determined by suitably diluting the fluid in tube D until the colours match and reading the calibrations on this tube.

Results

The accuracy of the method has been tested by the usual procedure of recovering known amounts of glucose added to blood, the blood sugar being determined before and after the addition. The results, shown in Table I, can be seen to be remarkably good.

The method has also been used on a number of blood samples by a medical graduate with no special chemical training. All matching was done by artificial light in order to simulate ward emergency conditions, as, for example, in the diagnosis and treatment of a patient in a diabetic coma admitted at night. A parallel series of determinations was also carried out by a trained laboratory technician, using the method of Herbert and Bourne (1930). The results are shown in Table II. The findings speak for themselves.

TABLE I.—*Recovery of Glucose Added to Blood*

Blood Sugar (mg. per 100 ml.)	Added Glucose (mg. per 100 ml.)	Calculated Total	Found	% Error
85	100	185	185	0
85	200	285	290	+2
85	300	385	380	−1
85	400	485	500	+3
70	100	170	170	0
70	200	270	260	−4
70	300	370	380	+3
70	400	470	450	−4
120	100	220	240	+9
120	200	320	340	+6
120	300	420	420	0
120	400	520	490	−6
65	100	165	165	0
65	200	265	255	−4
65	300	365	390	+7
65	400	465	480	+3

TABLE II.—*Comparison with Laboratory Findings*

Blood Sugar (mg. per 100 ml.)		Blood Sugar (mg. per 100 ml.)	
Emergency Method	Laboratory Method	Emergency Method	Laboratory Method
107	120	115	125
104	115	140	140
195	190	70	70
110	120	250	280
70	85	240	260
120	135	235	250
180	180	70	65
210	210	240	220
225	220	400	420

A sufficient degree of accuracy for most clinical requirements could no doubt be obtained by the provision of a dropping pipette which delivers 0.1 ml. of blood in a known number of drops. This, in conjunction with a similar method for delivering the sodium tungstate, would simplify the method still further.

Summary

With the use of easily constructed apparatus the method of Haslewood and Strookman has been converted to a simple dilution technique, requiring neither colorimeter nor photometer.

Estimations have proved accurate in the hands of a medical graduate with no special training in biochemical methods.

We wish to thank Dr. W. Jack, who carried out the determinations in Table II.

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The housing progress summary for May, presented to Parliament as a White Paper (Cmd. 7723), shows that the number of permanent houses completed in Great Britain during May was 16,866, compared with 15,110 in April. This brings the number of permanent houses completed during 1949 to date to 84,688. The total number of houses completed since the war is 667,656 (510,408 permanent and 157,248 temporary). Of the permanent houses, 379,016 were built by local authorities and 86,492 by private enterprise. During May homes were provided by new building, repair of uninhabitable houses, conversion, and requisitioning for 18,469 families, compared with 16,587 in April. This brings the total number of families rehoused by these methods under the post-war programme to 957,113.

METHYL N-PROPYL ETHER

BY

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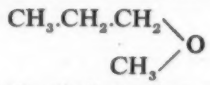
Methyl n-propyl ether, known also as "metopryl," is a clear, colourless, volatile liquid having a characteristic smell which is not unpleasant. It has the chemical formula of



and is isomeric with diethyl ether and isopropyl-methyl ether (isopryl). Methyl n-propyl ether was first used as an inhalational anaesthetic on the human subject on Oct. 3, 1945, at the South Baltimore General Hospital for appendicectomy and uterine suspension.

Carr *et al.* (1947) give the following information concerning these ethers:

TABLE I

	Diethyl Ether	Metopryl	Isopryl
Boiling-point	35° C.	39° C.	31° C.
Solubility in water (ml. in 100 ml. at 25° C.)	8·6	5·0	9·9
Oil/water coefficient	4 ± 0·4	10 ± 1	2 ± 0·2

The inflammability range is identical with that of diethyl ether (White *et al.*, 1946). The specific gravity is 0.726 at 16° C.

In their series of cases White *et al.* found that, compared with diethyl ether, methyl n-propyl ether was less irritating to the respiratory tract, the pulse rate was not as rapid, the blood pressure rose and returned to normal more quickly, and muscular relaxation was more easily achieved. Post-operative nausea and vomiting were less and there were no pulmonary complications. The physical signs of varying depths of anaesthesia do not vary greatly from Guedel's classification. They also found that the potency of methyl n-propyl ether when measured on the dog is approximately 25% greater than that of diethyl ether.

Fisher and Whitacre (1947) from a series of 500 cases concluded that decreased irritation of the respiratory tract is the drug's only advantage over diethyl ether.

Krantz *et al.* (1947) consider that methyl n-propyl ether has a wider margin of safety than diethyl ether. They state that if it be assumed that to induce anaesthesia with diethyl ether the volume per kg. of body weight is 1 ml., and to produce respiratory arrest the volume per kg. is 2 ml., the corresponding volumes of methyl n-propyl ether are 0.84 and 2.1 ml. Therefore methyl n-propyl ether has a higher potency but a wider margin of safety than diethyl ether. Rochberg (1947) showed that in 86 cases 52.8% had nausea or vomiting.

Clinical Trial

I obtained a small amount of methyl n-propyl ether for clinical trial, though the scarcity of the drug made it impossible to carry out the investigation on as large a scale as one would have wished. Table II shows the list of cases included in the series. In all except Cases 16, 17, and 18 the ether was placed in the ether container of a Mushin closed-circuit apparatus, while in those three instances the ether was placed in the chloroform bottle of the Boyle apparatus.

In my hands the induction period was not much shorter than with diethyl ether, though, contrary to expectations, it was shorter in those cases in which the ether was in the chloroform bottle. Cases 16 and 17 were powerfully built men who settled quickly and quietly. The diminished irritation of the respiratory tract was very noticeable. Relaxation was satisfactory, but not more so than with diethyl ether. The post-operative period was most satisfactory.

TABLE II

Case No.	Sex	Age	Operation	Duration in Minutes	Complications	
					Vomiting	Pulmonary
1	M	53	Partial gastrectomy	125	No	Yes
2	M	19	Trendelenburg operation	37	No	No
3	M	33	Herniorrhaphy	45	No	Yes
4	M	44	For hydrocele	20	No	No
5	F	41	Bilateral cervical sympathectomy	80	No	No
6	F	18	Appendicectomy	25	No	No
7	F	64	Herniorrhaphy	30	No	No
8	F	25	,,	60	No	No
9	F	16	Appendicectomy	90	No	No
10	F	17	Lengthening of tendo Achillis	35	Yes	No
11	F	27	Keller's operation	24	Yes	No
12	F	64	,, ,,	15	No	No
13	M	25	Meniscectomy	27	No	No
14	M	29	Reamputation end of fibula	22	No	No
15	F	42	Keller's operation	25	No	No
16	M	41	Removal os calcis spur	15	No	No
17	M	46	Meniscectomy	25	No	No
18	M	42	For dislocated scaphoid	20	No	No
19	F	24	Tonsillectomy	18	No	No
20	F	43	Herniorrhaphy	60	No	No

Case 1 was a nervous man who had a high abdominal incision—the type of case in which pulmonary complications would be expected. Case 3 had a rise in temperature, and on *x*-ray examination was found to have tuberculous cavities in his apices and a positive sputum which had been missed in the pre-operative examination. Cases 10 and 11 each had a slight amount of vomiting on one occasion.

Apart from these cases all patients made an uninterrupted recovery and had no complaints to make about the anaesthetic. Other members of the surgical teams concerned noticed the unusual smell of the methyl n-propyl ether but made no adverse comments. In 10 cases there was a fall in the pulse rate during administration of the anaesthetic, in five a rise and later a fall, in four a rise which did not return to the former level, and in one case a fall which did not return.

Summary

Methyl n-propyl ether is described. The results of a clinical trial of this inhalational anaesthetic in 20 cases are given. The chief points of interest are the lack of irritation of the respiratory tract and the small percentage of post-operative pulmonary and gastric complications.

I wish to express my thanks to Messrs. Duncan, Flockhart and Co. for their kindness in providing me with the sample of methyl n-propyl ether used in this test.

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The functions of the National Research Development Corporation, which are defined in the Development of Inventions Act, 1948, are to secure, where the public interest requires, the development or exploitation of inventions and to acquire and dispose of rights in connexion with inventions. The President of the Board of Trade has appointed the following members of the corporation: Sir Percy Mills (chairman), the Earl of Halsbury (managing director), Professor P. M. S. Blackett, F.R.S., Sir John McLean Duncanson, Sir Edward H. Hodgson, Mr. W. E. P. Johnson, and Sir Edward de Stein. Correspondence should be addressed to the corporation at I.C. House, Millbank, London, S.W.1 (telephone: Whitehall 5140).

SIGNIFICANCE OF CONVULSIONS IN INFANCY

BY

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AND

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There are two opinions about the significance of convulsions in infancy. One is that convulsions within the first two years of life are of no serious significance, that many children have them, and that these children are no more likely than others to have convulsions later in life. This view is often held by parents and general practitioners. Peterman (1939) supports this view, as follows: "The young child is subject to certain hazards and diseases. These diseases are characterized by a tendency to produce convulsions. Once these hazards have been safely passed, the child is no more susceptible to seizures than is the adult under similar circumstances." The second opinion is favoured by neurologists. They usually hold that infantile convulsions are the early manifestation of epilepsy. Turner (1907) found in his series of 1,000 epileptics that the greatest number beginning in any single year occurred in the first year of life.

The purpose of this paper is to present some evidence which may contribute to the formation of an opinion on the significance of these convulsions.

Present Investigation

The evidence is based on observations obtained from two groups—a group of 200 patients attending hospital as out-patients on account of epilepsy, and a control group. Each group is subdivided into two according to age—namely, one to contain subjects aged 2 to 15 years, and the other to contain those from 15 to 35. The 100 controls aged 2 to 15 were out-patients at the Hospital for Sick Children or at the Leicester Royal Infirmary, which they were attending for disorders other than epilepsy; the 100 controls from 15 to 35 were acquaintances of one of us (P.W.N.), and included a large number of hospital workers, nurses, technicians, and doctors. The 200 epileptics were out-patients attending the National Hospital on account of this disorder.

It will be understood that in the epileptic groups there is selection to the extent that no one is included who has to live in an institution—such as an epileptic colony, an institute for mental defectives, or a mental hospital. The epileptics are those who remain within the normal community, living in their own homes, attending London schools, and working; and those in the control groups are their counterparts, but having no fits. No one was admitted into the control group unless he was able to find out from his parents whether he had had infantile convulsions; also, in the epileptic group the history was always obtained from a parent, who was asked about the occurrence of any convulsions, fits, faints, sudden stiffenings with loss of consciousness, or facial expression of vacant staring.

Of the control subjects, two (2%) in each age group had had infantile convulsions. Of the 100 epileptic subjects from 2 to 15, 34 had had infantile convulsions, and of the 100 from 15 to 35, 14 had had infantile convulsions.

This pronounced difference—2% in the control groups and 14% and 34% in the epileptic groups—makes it clear that convulsions within the first two years of life are to be taken as a manifestation of epilepsy, and that the subject so afflicted is likely to have a recurrence of fits in later years. It also seems that the recurrence is likely to show itself before the fifteenth year. It is of interest that this percentage of those having a recurrence of fits before the age of 15 is so much higher than that of those having a recurrence after the age of 15. This may indicate that the longer the child lives free from convulsions the less likely he is to have any.

The question arises, If convulsions within the first two years of life indicate that the child is an epileptic, should some treatment be started? General neurological opinion holds that the longer the subject remains free from attacks the less likely he is to have further attacks. The lower percentage in the older epileptic group supports this belief. This observation upholds the view that any child having convulsions should be treated with anticonvulsant drugs for a prolonged period, and possibly for years.

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Medical Memoranda

Bilateral Hydrosalpinx with Torsion of Both Tubes

Torsion of the Fallopian tube is an uncommon condition, but cases are reported in the literature fairly regularly. Anspach (1912) was able to collect 95 cases, and in 62 of them the lesion of the tube was a hydrosalpinx. Eastman (1927) brought the number of cases of torsion of hydrosalpinx up to 91, and Goldberg and Olim (1938) increased the figure to 108. The condition, therefore, is not excessively rare, but bilateral torsion is extremely uncommon. Anspach records seven instances in his paper, and since then additional cases have been described by Sénéchal (1932), Pineda and Campagnoli (1934), and Ficklen (1938).

CASE REPORT

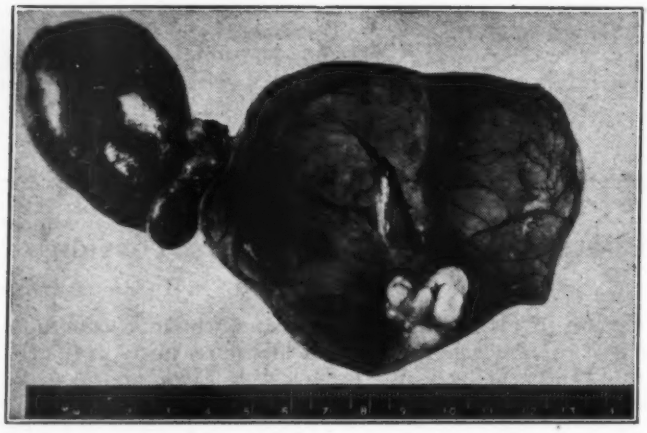
A nulliparous married woman aged 24 was admitted to the West Middlesex County Hospital on May 31, 1948, complaining of a sharp knife-like pain in the right loin, radiating round to the front of the abdomen and down to the pubes, of twenty-four hours' duration. There had been nausea but no vomiting. Her bowels had been regular and micturition had been normal apart from slight difficulty in initiating the act since the onset of the pain. Her periods took place every 23 days and lasted seven days. She experienced some backache on the first day. Her next period was expected on the day after her admission, and in fact it began that day. She complained of some yellow vaginal discharge which was most pronounced on the two days before the onset of menstruation. Her previous health had been good; she had never experienced a similar attack of pain in the past. She had undergone two minor operations for the correction of a narrow introitus.

On physical examination her temperature was 100° F. (37.8° C.), pulse rate 92, and respirations 20. The tongue had a moist white coat. The abdomen moved fairly well on respiration, and there was slight tenderness and muscle-guarding in the lower quadrants of the abdomen, greater on the right side than on the left. Rectal examination revealed the presence of two cystic swellings (or one bilobular swelling) in the pouch

of Douglas, each about the size of a tangerine and attached to the back of the uterus. They were moderately tender. This finding was confirmed on vaginal examination. The white cells numbered 15,000 per c.mm., of which 77% were polymorphs. A radiograph of the pelvis showed the presence of a cluster of teeth in front of the sacrum and a little to the left of the midline. A diagnosis of twisted or infected dermoid ovarian cyst was made.

Above—the right hydrosalpinx. Below—the left hydrosalpinx with the associated dermoid cyst, opened to show teeth and hair.

Operation.—On June 4 the abdomen was opened through a midline subumbilical incision. The left ovary was replaced by a dermoid cyst the size of a large pear. There was a left hydrosalpinx the size of a hen's egg which had undergone torsion



about one and a half times in a clockwise direction. It was blue in colour and had a congested appearance which improved when the torsion was undone. On the right side there was also a hydrosalpinx which had undergone torsion. It was the size of a duck's egg and was purplish red. It was clearly the seat of strangulation. The twist was also about one and a half times in a clockwise direction. The point of torsion was at the junction of the normal and cystic portions of the tube about 1 in. (2.5 cm.) from the cornu of the uterus. At this point the tube was constricted by a narrow omental adhesion. The right ovary was about the normal size, but was studded with small cysts. A left salpingo-oophorectomy and a right salpingectomy were performed, the severed end of the right tube being left open. The appendix was removed and the abdomen closed.

Convalescence after operation was uneventful and the patient returned home on June 17. Her customary menstrual cycle has continued since the operation.

The specimens have been mounted for preservation in the hospital museum, and consequently no histological examination of the tubes has been made.

COMMENT

The left hydrosalpinx was in a state of simple torsion without gross interference with the blood supply, while the right tube had undergone torsion with strangulation, converting the hydrosalpinx into a haematosalpinx. The patient's symptoms were produced by the lesion of the right tube; the twist of the left tube was a coincidental finding. The omental adhesion around the point of torsion of the right tube may have been an important factor in producing the twist by constricting the area of attachment of the hydrosalpinx. The dermoid cyst of the left ovary had not taken part in the torsion of the left tube and did not seem to have had anything to do with its production.

A study of the recorded cases of torsion of the Fallopian tube reveals that in the majority of cases the tube is the seat of disease, although a normal tube may undergo this complication. The commonest lesion is a hydrosalpinx, and this fact is well shown in the figures quoted above from Anspach's paper. A hydrosalpinx satisfies the conditions required for torsion of an organ—namely, a freely mobile tumour attached to a more or less fixed base by a pedicle. A pyosalpinx, on the other hand, is much less likely to undergo torsion because of surrounding adhesions which limit its mobility.

The clinical picture of torsion of the tube resembles that of torsion of an ovarian cyst, for which it has often been mistaken, but differs in that the symptoms are much less severe, and also in that shock is not a feature of the condition.

I wish to thank Mr. John Scholefield, under whose care the patient was admitted, for guidance and for permission to publish this case.

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Leiomyosarcoma of the Stomach

Leiomyosarcoma is one of the rarest tumours of the stomach, comprising only 10% of all gastric sarcomas. Ewing (1940) estimated that 1% of malignant tumours of the stomach were sarcomatous. At the Mayo Clinic in one year, however, of 298 malignant lesions of the stomach 3.3% were sarcomas (Counseller *et al.*, 1946). Edwards and Wright (1933) thought the condition more common than the number of reported cases indicated.

CASE REPORT

The patient was a Bantu woman aged 21. She had four years' history of attacks of severe epigastric pain, which was unrelated to meals but worse before her periods. For the last six months she had continuous pain and frequent vomiting, the vomitus being pale and never coffee-ground in appearance. Her appetite was good, but she had lost a great deal of weight and was becoming progressively weaker. Her diet was predominantly carbohydrate, and her home conditions were poor.

On examination she was cachectic and too weak to stand. The temperature was 100° F. (37.8° C.) and pulse 120. In the abdomen a hard, tender mass was felt occupying the costal angle; there was a second mass under the left costal margin which appeared to be connected with the liver. Both masses were felt only on deep inspiration. There were no other physical signs.

The patient stopped vomiting on the day of admission. She exhibited a remittent temperature which frequently reached 102° F. (38.9° C.). A chest radiograph showed clear lung fields but a raised left diaphragm. She was too ill for screening.

The blood count demonstrated a hyperchromic anaemia, with metachromasia and anisocytosis. The r.b.c. was four million, the Hb 77%, and the colour index 1.1. The w.b.c. was 13,000, of which 79% were polymorphs. Examination of the sternal marrow showed a macronormoblastic reaction. A fractional test meal revealed complete absence of free HCl, a low total acidity in the resting juice, and no rise in response to a gruel

meal. Blood was present in one specimen. The sugar tolerance curve for hepatic function showed a fasting level of 80 mg.% and a rise of blood sugar after 50 g. of dextrose to 200 mg.%, followed by a lagging fall. There was no glycosuria. The E.S.R. was 31 mm./hour (Cutler technique).

Ten days after admission the patient passed a stool consisting of a large amount of red clotted blood. Proctoscopic examination revealed no abnormality. After this haemorrhage the blood count was: r.b.c. 2,400,000, w.b.c. 7,000, Hb 20%, colour index 1.1. The patient was free of abdominal pain, vomiting, and diarrhoea, and felt better, but showed some oedema of the feet. She was given 5 ml. of liver extract intramuscularly daily, and received two blood transfusions of 250 ml. each on successive days. There was no reticulocyte response to the liver therapy after nine days. She became somnolent and died five weeks after admission.

In view of the long history, the macronormoblastic bone marrow, the lower bowel haemorrhage, the oedema, and the macrocytic anaemia which failed to respond to liver, she was considered a case of post-necrotic fibrosis of the liver.

At necropsy a large pedunculated neoplasm, fungating and foul-smelling, was found arising from the lesser curvature and posterior wall of the stomach and infiltrating the left lobe of the liver, which was in contact with it. There were no other deposits in any part of the body. The liver itself was large and fatty. Microscopic examination of the mass revealed it to be a leiomyosarcoma.

I am indebted to Dr. Dormer, medical superintendent of King George V and Springfield Hospitals, for permission to publish this case.

ELIZABETH GREATHEAD, M.B., Ch.B.,
Medical Officer, Springfield Hospital, Durban.

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Hydatid Cyst and Cirrhosis

The following is a case of hydatid cyst associated with gross cirrhosis of the liver, an association which has rarely been reported.

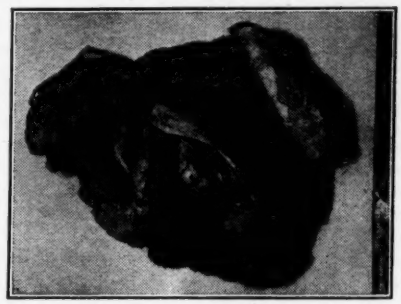
CASE REPORT

A woman aged 68 was admitted to Edgware General Hospital on Sept. 27, 1947. She had been well and on holiday until that morning, when she vomited a small quantity of blood; during the day she vomited blood several times, in all about half a pint (284 ml.). She was seen by her doctor about 7.45 p.m. and had difficulty in giving her history, as she seemed dazed. She received an injection of morphine and was transferred to hospital. On arrival at 9 p.m. she was semi-conscious and unable to give any history. Her relatives could add little to the above account except to say that she had had two abdominal operations in early life, the first of these at 13 years, and a third in 1931. The only notes available concerning the last stated: "Laparotomy—hydatid cyst." In 1944 she had a haematemesis from which she entirely recovered. She had lived all her life in Lancashire except for pilgrimages to Lourdes, and she was not an alcoholic.

Examination showed a semi-conscious woman, moderately pale and sweating slightly, who was vomiting blood clot. A few purpuric spots were present on the limbs, and on the abdominal wall there were enlarged veins and two upper abdominal laparotomy scars. The liver edge was 2 in. (5 cm.) below the costal margin; it was smooth and hard, with one large rounded eminence. A firm spleen was palpable 1 in. (2.5 cm.) below the costal margin. She also showed bilateral corneal opacities, depressed tendon reflexes, and a right extensor plantar response. The pulse rate was 110 and blood pressure 100/60. She was afebrile and free from jaundice. There were no other significant findings.

On admission her urine contained protein but was otherwise normal. Blood count showed: haemoglobin, 68%; red blood cells, 3,360,000 per c.mm.; white blood cells, 14,400 per c.mm. Plasma proteins: Total, 5.75 g.%; albumin 3.4 g.%, globulin 2.35 g.%. The cerebrospinal fluid was normal in all respects. She was transfused with one litre of blood and 800 ml. of 5% glucose, but failed to improve, and died 36 hours after admission.

Post-mortem Examination (Dr. H. C. Moore).—The body was generally obese. There were large oesophageal varices, and the stomach and intestines contained fresh blood. There was no ascites. The liver weighed 1.95 kg. (normal, 1.2–1.4 kg.) and the right lobe was replaced by a cavity, 18 cm. in diameter, which contained turbid fluid. The walls were composed of a 4-mm. layer of fibrous tissue and compressed liver tissue with a shaggy fibrinous inner surface (see photograph). There was no calcification. The remainder of the liver showed a multilobular cirrhosis with nodules of hyperplastic liver tissue; there were no remnants of other cysts elsewhere in the liver. Gall-bladder and ducts were normal. The spleen was four times its normal size, and firm. Apart from oedema of the lungs there were no other macroscopic abnormalities. Microscopically the liver showed a multilobular cirrhosis. The wall of the cyst consisted of vascular collagenous tissue in which normal bile ducts could still be seen, but no liver parenchyma was present.



The posterior wall of the cyst has been opened; the liver is cirrhotic.

COMMENT

The cause of death appeared to be liver failure due to multilobular cirrhosis, precipitated by a haematemesis from oesophageal varices. Morphine may have slightly hastened death. The large thick-walled cyst which was found at necropsy had existed for many years, and was almost certainly hydatid in origin. Instead of becoming shrunken and calcified after the death of the parasite, as is usual, it had remained distended. Its relationship to the cirrhosis is uncertain.

All authors are agreed on the frequency with which compensatory hyperplasia of the liver cells occurs when part of the liver is destroyed by hydatid disease, but most consider that cirrhosis and hydatid disease occur together merely by coincidence. Dew (1928), for example, states that in view of the great difficulty of excluding other causes it seems that the existence of a true hydatid cirrhosis remains to be proved. A biliary cirrhosis due to obstruction of the bile ducts by hydatid material has been described. It is hard to believe, however, that in the above case multilobular cirrhosis and a thick-walled cyst were present together only by chance. Stevens (1901) described a similar case—that of a man aged 63—in which two cysts were present. Both in his and in my case the cysts had probably existed since childhood, and their great age and survival after the death of the parasite may have had some bearing on the development of cirrhosis.

I am indebted to Dr. G. H. Jennings for his advice and to Miss M. H. Shaw for the photograph.

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Reviews

MANUAL OF PUBLIC HEALTH

Hygiene. By J. R. Currie, M.D., Ll.D.Glas., D.P.H.Birm., F.R.C.P.Ed., and A. G. Mearns, M.D., B.Sc.(Public Health), D.P.H.Glas., F.R.S.Ed. Third edition. (Pp. 724; 212 illustrations and 4 plates in colour. £1 15s.) Edinburgh: E. and S. Livingstone. 1948.

This is the second edition since the war of the textbook known affectionately in Scotland as "Currie and Mearns." Rapid changes have occurred since the publication of the 1945 edition, and in bringing the book up to date the authors have considerably enlarged it and greatly increased its value to both undergraduate and postgraduate students. Currie and Mearns has joined the ranks of standard textbooks on both sides of the border, and is by no means confined in its application to Scotland. The book covers the vast domain of public health and hygiene in 26 chapters. The broad picture presented portrays in considerable detail modern public health as a study of the environment and of the community which inhabits that environment. The personal health services are well represented, and the last chapter, entitled "The Social Vista," is an interesting outline of the history of social medicine, including its post-war developments. Great care has been taken with the chapters on food, community diseases, and infestation; personal hygiene and health education are dealt with by an author who has made a special study of these subjects.

It is curious how, even in the most carefully revised textbook, old phrases linger on as though in response to tradition. In chapter 4, for example, it is stated (p. 49) that "main latrines should be placed outside the school building." This is at least a generation out of date. Again, some of the statements about housing and, more particularly, ventilation require reconsideration in the light of recent investigations. In chapter 10 (p. 295) there is over-emphasis on cubic space and consequent under-stressing of the importance of floor area in small houses. Further, it is stated that 8 ft. is too low for a habitable room and that in ordinary houses the height of ceilings may range up to 11 ft. These statements will not stand up to obstinate questioning on grounds of either health or expense.

Nevertheless, the teaching is generally up to date and the subjects are presented in an attractive manner. The paper is excellent for a post-war production, and the book is extensively illustrated with more than 200 well-chosen diagrams, tables, and photographs. It is good to see the return of colour illustrations, which are very effective.

The student of hygiene, and especially candidates for the Certificate and Diploma in Public Health, will find in Currie and Mearns an excellent textbook which gives them all that is required for a well-balanced groundwork. For undergraduates it is easy to read and not difficult for reference. Medical officers of health, sanitary inspectors, and other officers engaged in the practice of preventive medicine are recommended to take it as a refresher course covering the whole field of their work.

J. M. MACKINTOSH.

PUBLIC HEALTH IN THE U.S.A.

Essentials of Public Health. By William P. Shepard, B.S., M.D., M.A. With the collaboration of C. E. Smith, M.D., R. R. Beard, M.D., L. B. Reynolds, A.B., Sc.D. With foreword by R. L. Wilbur, M.D., LL.D., Sc.D. (Pp. 600; illustrated. £1 10s.) Philadelphia and London: J. B. Lippincott Company. 1948.

As the dust-cover states, this book points out the place of the physician in to-day's public health activity and shows clearly where his support is essential. It is written for the practising doctor in the United States; I think it will appeal to a larger public, and that the public health officer in this country will find it stimulating. In the United States much still depends upon voluntary agencies and the enlightenment of public opinion (broadly speaking, public health education), and this aspect is prominent in the work. Health education is one of the new functions of the medical officer of health and that is why the volume may well find a place on his bookshelf. The legal and administrative aspects of public health in this country and in America present considerable differences, and the book will be found stimulating to thought for precisely this reason.

The section on tuberculosis is of particular interest. A letter from a High Court judge to the superintendent of a sanatorium, explaining why he had not caused a tuberculous child to be compulsorily committed to the institution, is an unusual item and one indicating that this is not just another textbook of public health.

There is a statement in relation to activated sludge which requires some elucidation. Among the advantages of this method of sewage treatment is mentioned low operating cost, but the next line gives among its disadvantages that of high operating cost; one may well ask how this can be. There are some excellent illustrations of American sewage disposal plant in this section.

Anyone who has produced a book dealing with an advancing subject will know how soon it is out of date, but it was very unkind of fate that in the excellent brief classification of the value of minerals in water there should occur, relative to nutritive trace elements, the statement, "All except cobalt are necessary to human nutrition." And now cobalt has been found to be a constituent of vitamin B_{12}, the anti-pernicious-anaemia factor.

C. O. STALLYBRASS.

FACTORY AND MINE HYGIENE

History of Factory and Mine Hygiene. By Ludwig Teleky, M.D. (Pp. 342. 25s.) Columbia: University Press. London: Geoffrey Cumberlege. 1948.

Written by an acknowledged authority, and with an introduction by Dr. Alice Hamilton, this book raises more hopes than it fulfils. Too much has been attempted, and the main argument is obscured by detail.

The author's thesis is an important one, and has been fully established. It is that "laws and regulations (thoroughly worked out) are indispensable to industrial hygiene." As a rider, the need for the active co-operation of all parties is insisted upon. Dr. Teleky stresses and proves the necessity for a scientifically trained Civil Service inspectorate, free from political influences and capable of determining in specific detail the regulations required for every hazardous process.

The book opens with a historic survey of the development of industrial hygiene, particularly in Britain, Germany, and the U.S.A. British practice started "from an outraged national conscience," and German practice from a special concept of the rights and duties of the State. American practice, with its virtues and anomalies, arose from the interaction of three forces—the demands of the workers, employers' interests, and the uncertain influences exerted by both central and local State authorities.

Written primarily with an eye to the contemporary American situation, the author covers an immense field in less than three hundred pages. The history (in three countries) of industrial legislation, co-operating agencies, medical, scientific, and research services, of injury and hazard prevention, of education, and of some special problems such as dust, compressed air, and skin diseases, is surveyed.

Special attention is devoted to the problems of mines and miners. Dr. Teleky is most successful in this part of his book. The section is followed by a chapter on the effects of industrial hygiene, and a summary concludes the text. There is a full bibliography and an adequate index.

Those who are concerned with the legislative aspects of industrial hygiene and are not already familiar with the history of the subject, or those who are interested in the history of industrial medicine, will value this comprehensive survey. As a book of reference it will prove valuable to medical libraries.

H. E. COLLIER.

ALLERGY

Practice of Allergy. By Warren T. Vaughan, M.D. Second edition. Revised by J. Harvey Black, M.D. (Pp. 1,132; 333 illustrations. $15.00 or £3 15s.) St. Louis: The C. V. Mosby Company. London: Henry Kimpton. 1948.

The investigation of allergy has suffered in the past from the uncritical claims of its enthusiastic adherents. This excessive enthusiasm, together with the difficulty of cure, has caused its study to be regarded too lightly by the medical profession in this country. The plain truth is that the allergic diseases are psychosomatic conditions in which the pattern of the mental and allergic processes are so interrelated that truly objective investigation is extremely difficult. This, however, does not detract from the interest or importance of the subject, which is so ably discussed in the new edition of this work.

Readers of this book cannot fail to be impressed by the vast amount of experimental work and the accumulation of clinical observation which it presents. It contains full information on every aspect of allergic diseases. The first 130 pages are devoted to theoretical considerations of the possible mechanism of allergy; the remainder deal with its more practical aspects. Over two hundred pages are devoted to food allergy. This subject has always received more attention in the United States than in this country, and it is not easy to decide whether it is overdiagnosed there or overlooked here, or if there is a real difference in incidence in the two countries. There can be little doubt, however, that if the patient and detailed investigations recommended by the authors were carried out in suspected cases here many more of that vague group of dyspepsias labelled "functional" would be found to be due to food sensitivity. On the other hand, it is difficult for us to believe that approximately 50% of Americans have some form of allergy to food.

There is a well-documented chapter on so-called physical allergy. This condition also receives scant attention in this country, although there is evidence that physical factors are responsible for the precipitation of attacks of asthma, urticaria, and similar illnesses far more commonly than is generally recognized. Little reliable work has been done to explain the way in which these factors produce their effects, and it may be that use of the term "allergy," by appearing to offer an explanation, has served only to obscure it.

The sections relating to drug allergy and contact allergy are of exceptional interest. Detailed information is also supplied for preparing extracts of all the important allergens (atopens).

An extensive bibliography is provided at the end of the volume. It is unfortunate that not all the papers referred to in the text are included.

This is an excellent book in which one of the leading American exponents of allergy has set down the results of his extensive experience. It contains a critical and up-to-date review of the literature, and this makes it a valuable reference book. It can be whole-heartedly recommended to all interested in the subject.

R. S. BRUCE PEARSON.

BLOOD SUBSTITUTES

Blood Derivatives and Substitutes. By Charles Stanley White, M.D., Sc.D., and Jacob Joseph Weinstein, B.S., M.D. (Pp. 484; illustrated. £2 1s.) London: Baillière, Tindall and Cox.

This book gives a description of current American practice in the preparation and administration of plasma and plasma substitutes. Most aspects of the subject, both practical and theoretical, receive comprehensive treatment, and it can be said that this is a valuable work of reference to what has been and is being done in this field in the United States, written by workers with much experience of what they describe. British methods differ considerably from American ones, and the book cannot therefore be used as a routine guide in this country. The historical section is, on the other hand, refreshingly broad-minded in giving credit to the pioneers of transfusion in all countries.

There is a good account of the physiology and biochemistry of plasma, but it may be questioned whether it is needed in a book of this type. The techniques of preparation, storage, and administration of liquid and dried plasma are treated extensively and well, but with a totally unnecessary wealth of photographic illustrations, many of them simply representing labelled bottles, or even the cutting of a rubber tube with a pair of scissors. There follow chapters on plasma fractions, on by-products of plasma preparation, and a somewhat inadequate section on plasma substitutes in which little is said of the extensive work done in the past on gum saline; nor is there any reference to the important recent Swedish research on dextran. Further sections discuss human serum, blood preservation and transport, and the clinical results of plasma administration.

In a final chapter on reactions the account of homologous serum jaundice is totally inadequate. Less than a page is devoted to what is in practice, both in the United States and England, the most dangerous of all sequels to plasma administration; nor is any useful guidance given for the prevention of this complication. The mere avoidance of donors with a history of jaundice gives little protection. The recommendation regarding donors who may have run the risk of yellow fever infection is not relevant unless they have received vaccine prepared with human plasma.

The book will thus be of greater interest to those concerned with the administration of blood collection, processing, and transfusion than to clinicians.

A. E. MOURANT.

HAEMOSTATIC AGENTS

Hemostatic Agents. By Walter H. Seegers, M.S., Ph.D., and Elwood A. Sharp, M.D., Sc.D. (Pp. 131; 27 figures. $4.75 or £1 5s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1948.

This small book provides a useful review of the haemostatic agents which have been developed as a result of the study of blood coagulation and fractionation of the plasma proteins. Professor Seegers is well known for his work on the physiology of coagulation, and Dr. Sharp has been largely responsible for the development of haemostatic materials by Parke, Davis, and Company.

The first section describes the process of clotting on conventional physiological lines, although greater stress than usual is laid on fibrinolysin. The chapters discussing the practical uses of the haemostatic agents will be of greater interest to clinicians. The value of thrombin solution in the control of haemorrhage in prostatectomy and other surgical operations is reviewed, although no mention is made of its use in the arrest of haemophilic bleeding. Fibrinogen solutions have been employed for the fixation of skin grafts and for nerve suture. They have provided an ingenious method of pyelolithotomy, whereby the ureter is occluded and the renal pelvis filled, through a small incision, with fibrinogen and thrombin solutions. The resulting coagulum is withdrawn through the usual incision, and enmeshed in it are all the stones lying free in the renal pelvis. The final chapters deal with the absorbable materials which may be used as haemostatic agents, alone or in combination with thrombin. Oxidized cellulose and fibrin foam are familiar to most surgeons in this country, but gelatin sponge, which has uses similar to those of fibrin foam, is less well known.

This book is an opportune résumé of the newer methods of obtaining haemostasis. It is, moreover, a tribute to the fertile co-operation of physiologist, clinician, and manufacturing chemist.

R. BODLEY SCOTT.

ADVANCES IN PSYCHIATRY

Modern Trends in Psychological Medicine, 1948. Edited by Noel G. Harris, M.D., F.R.C.P., D.P.M. (Pp. 450; 25 figures. £2 10s., plus 1s. 6d. postage.) London: Butterworth and Co. 1948.

The editor undoubtedly had a difficult task in choosing the subjects to be covered in an account of modern trends in

psychiatry, for these are diverse and chaotic. Nevertheless, much of the interest this work will arouse will come from the fact that psychiatry has so many growing points, for the first time included in a comprehensive book.

Psychiatry is changing under our eyes, and what seems to be a dominant trend to-day may in twenty years be looked on as a blind alley, an eccentricity of our age which led nowhere. Dr. Harris says in his introduction that the most important requirement in psychological medicine is a narrowing of the gap between this and other branches of medicine. Yet an exactly opposite view could equally well be taken. Fissiparous tendencies get stronger rather than weaker with the years. The gap between psycho-analysis and the older psychiatry has widened since the days when Bleuler formulated the concept of schizophrenia, and he and his collaborator Jung used psycho-analytic ideas in the interpretation of psychotic symptoms. Psycho-analysis itself is splitting into warring camps, and the American school, which attributes the cause of psychiatric syndromes almost entirely to "sociogenetic" factors, has moved far from the position taken by Freud and still maintained by his more orthodox followers. The psychodynamic school branches and proliferates, and has now invaded industrial medicine, sociology, anthropology, and at last politics, economics, and statecraft. Reflections of these developments are found, as is proper, in this book.

In all, six chapters are given to psychosomatic medicine, the physiology of emotion, constitution, causation, electrophysiology, and physical treatment. The remaining thirteen chapters are allotted to social and psychodynamic aspects. As in all such collections of contributions from many authors, some chapters are excellent and others less meritorious, some are informative and factual and others speculative and dogmatic. The opinions voiced in some sections are in direct contradiction to those expressed in others. The reader may make his own choice. No doubt the views he adopts will be determined less by rational than by emotional considerations, but, whatever they are, if he looks diligently he will find authoritative support.

ELIOT SLATER.

COMMON SENSE ON CHILDREN

The Child: An Adult's Problem. By Anthony M. Ludovici. (Pp. 288. 10s. 6d.) London: Carroll and Nicholson.

Mr. Ludovici is a cynical and dogmatic writer who will no doubt shock many people; nevertheless there is a great deal of sound common sense in what he says. He deprecates the conventional child-worship based on Wordsworth's conception of the innocent child trailing clouds of glory. This is part of what he regards as a retreat from adulthood, seen especially in women who desire power over children, pet animals, and the poor. Adults pretend they remember the innocence of their own childhood; but the child is prevented only by his muscular weakness and incoordination from behaving in the most asocial or antisocial way. This tendency can be counteracted only by the imposition of proper discipline, which is not synonymous with punishment. Corporal punishment should never be needed if mutual love and respect between parent and child have been established from the earliest years. A spoilt child generally reflects narcissism in the mother, which is likely to be greater the older she is. In this sex-phobic society the child is venerated because he is supposed to be sexless; but to parents, and especially to fathers, he is a manifestation of their sexual potency. He is a means of achieving ascendancy, yet each parent tries to win his love. There is therefore considerable confusion in relation to the child, which may be reflected in the present confusion of the world. The elders are gradually losing the respect of the child and dominance over him, and this is responsible for much delinquency. The proper way to train the child is discussed, and there is a sensible final chapter on sex education. This is a provocative and well-written book which should prove of interest to a large circle of readers, and certainly to the medical profession.

R. G. GORDON.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Tuberculosis Reference Statistical Yearbook, 1947. (No price.) New York: New York Tuberculosis and Health Association. 1948.

Illustrations of Surgical Treatment. By E. L. Farquharson M.D., F.R.C.S.Ed., F.R.C.S. 3rd ed. (Pp. 390. 25s.) Edinburgh: E. and S. Livingstone. 1949.

An Account of the Schools of Surgery: R.C.S., Dublin 1789-1948. By J. D. H. Widdess, M.A., L.R.C.P.&S.I. (Pp. 107. 17s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

Understanding Ourselves. By M. Macaulay. (Pp. 148. 7s. 6d.) London: Routledge and Kegan Paul. 1949.

Trial of James Camb. Edited by G. Clark. (Pp. 255 15s.) London: William Hodge. 1949.

Poliomyelitis. Papers and discussions presented at the First International Poliomyelitis Conference. (Pp. 360. 30s.) London: J. B. Lippincott. 1949.

Fundamentals of Internal Medicine. By W. M. Yater, A.B., M.D., M.S., F.A.C.P. 3rd ed. (Pp. 1,451. $12.) New York: Appleton-Century-Crofts. 1949.

Manual for Laboratory Work in Mammalian Physiology. By F. E. D'Amour and F. R. Blood. (Pp. 50. 15s.) London: Cambridge University Press. 1948.

Estreptomicina y Meningitis Tuberculosa en la Infancia. By J. M. S. Ginabreda and A. E. M. de Larramendi. (Pp. 135. No price.) Barcelona: Byp. 1949.

Lehrbuch der Haut- und Geschlechts-Krankheiten. By G. A. Rost. 2nd ed. (Pp. 162. M. 12.) Berlin: Springer. 1948.

Medicina Psicosomatica. By E. Weiss and O. S. English. (Pp. 699. No price.) Buenos Aires: Lopez and Etchegoyen. 1949.

Répercussions sur L'Enfant des Maladies Infectieuses de la Mère Pendant la Grossesse. By F. Bamatter. (Pp. 60. 7.50 Swiss francs.) New York and Basle: S. Karger. 1949.

La Vectocardiographie. By P. W. Duchosal and R. Sulzer. (Pp. 172. 25 Swiss francs.) New York and Basle: S. Karger. 1949.

Notfallchirurgie. By A. Ritter. 2nd ed. (Pp. 514. M. 46.) Stuttgart: Ferdinand Enke. 1949.

Annales Instituti Obstetricii et Gynecologici. Edited by M. Rauramo. Vol. 23. (No price.) Helsinki: Mercatorin Kirkjapaino. 1949.

Le Stilboestrol. By E. Daubresse and others. (Pp. 181. 140 francs.) Paris: Masson. 1948.

Röntgendiagnostik des Herzens und der Grossen Gefässe. By E. Zdansky. 2nd ed. (Pp. 434. 93s.) Vienna: Springer. 1949.

Diagnostic et Traitement des Maladies de L'Enfance. By C. A. Apffel. (Pp. 686. 1,200 francs.) Paris: Librairie Maloine. 1948.

Histologie und Mikroskopische Anatomie des Menschen. By W. Bargmann. Vol. 1. (Pp. 210. M. 19.60.) Stuttgart: Georg Thieme. 1948.

Über Sogenannte "Kosmische" Rhythmen beim Menschen. By B. de Rudder. 4th ed. (Pp. 54. M. 3.20.) Stuttgart: Georg Thieme. 1948.

Die Geburtshilflichen Operationen. By H. Martius. 6th ed. (Pp. 287. M. 15.60.) Stuttgart: Georg Thieme. 1948.

Kurzgefasstes Lehrbuch der Erkrankungen des Ohres, der Nase, und des Halses. By A. Güttich. (Pp. 256. No price.) Stuttgart: Georg Thieme. 1948.

Verstehende Psychologie. By H. W. Gruhle. (Pp. 622. M. 30.) Stuttgart: Georg Thieme. 1948.

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HYPNOSIS IN TREATMENT

The position of hypnotism in medical practice is ambiguous: only a small minority of doctors take an interest in it, or make any practical use of it, and the majority of their colleagues are sceptical of the value of the results obtained. Owing to public displays of hypnotism on the music-hall stage, the atmosphere that gathers about the hypnotist, even the medical hypnotist, does not provide the sort of climate in which most medical practitioners feel at home. The practice of hypnotism is ancient. Priests of all religions have at times employed it to produce apparently occult effects. It was introduced to medicine by Franz Anton Mesmer, a physician who practised in Vienna 150 years ago, and Mesmer himself is said to have learnt the technique from a Catholic priest who used it to exorcise devils. Mesmer applied the method to the cure of patients and, discarding any notion of divine intervention, tried to explain his results by the theory of a "magnetic fluid" which was supposed to flow from the hypnotist into his subject. Disease was due to an abnormality in the flow of the magnetic fluid, and could be cured by correcting its flow. Finding medical scepticism and resistance in Vienna, Mesmer moved to Paris, only to meet the same fate there. His spectacular successes and a technique which was not lacking in some charlatanry caused ill feeling in his colleagues, and a commission adjudged him a fraud.

Mesmer died in obscurity, but his practices found other adherents, and since then a series of honest and respectable medical men and psychologists have developed the technique of hypnotism, simplified theoretical explanations, and added to our knowledge of its physiological nature. Better known among these names are those of Forel and Moll on the Continent, of Braid and Bramwell, and, in recent years, of Brown and McDougall in this country. Surgical operations under hypnotic anaesthesia are first known to have been performed in France in 1821. Isolated instances of the use of hypnotism for this purpose have been reported in the medical and general press ever since. A field in which it is said to be particularly valuable, and which has attracted some recent notice, is the reduction or abolition of the pain of childbirth. One of the greatest difficulties in the practice of hypnotism is the unreliability and unpredictability of its effects: it is likely that the mother in the early stages of labour is in a more than usually suggestible state, and so is an exceptionally good subject for hypnotism.

The principal use of hypnotism has been for the relief and cure of neurotic, especially hysterical, symptoms. Hypnotic and hysterical states are closely allied, and both depend largely on suggestion and on a mechanism, which is not fully understood, of functional dissociation in the central nervous system. Effects can be produced both by hypnotism and in the course of hysterical illnesses which are beyond the capacity of the organism in ordinary circumstances. Estabrooks,[1] for instance, has reported that with the same electrical apparatus and methods of securing contact normal subjects found 15 volts painful and 20 volts unbearable, while 120 volts were taken without flinching under hypnotic anaesthesia. The cataleptic and paretic phenomena which can be induced by hypnotism also seem to be beyond serious question. Rather more doubtful are the claims which have been made that under hypnotism a direct suggestion can alter the rate of the heart or cause local dilatation or constriction of blood vessels, or that the central nervous system can be made more efficient by the production of a so-called hyperaesthesia or hypermnesia. Even with its admitted possibilities it is clear that hypnotism could be of service in the treatment of hysterical anaesthesias, pareses, spastic conditions, and amnesias, and that it might prove of value in the treatment of such single symptoms as headache, insomnia, tics, stammer, or enuresis.

The value of hypnotherapy is increased by the possibility of post-hypnotic suggestion. After waking from the hypnotic trance the subject has no recollection of the suggestion which the hypnotist has given him until it arises in his mind, apparently *de novo*, at the stated time or occasion. This is very frequently used in stage displays, and then often has a most unconvincing quality. At the appropriate signal the subject does indeed carry out the hypnotist's command, but, it appears to the observer, only by his own consent. The stage subject has himself a desire to make a good "show" and is no doubt prepared to co-operate in performing at the right time any action which is not too ridiculous or humiliating. The value of post-hypnotic suggestion for therapy lies almost entirely in its enabling the patient to do something which he badly wants to do but which he is ordinarily prevented from doing, and not in compelling him to do something which he does not wish to do.

There is very great variability from subject to subject in the ease with which a hypnotic state is induced, and also in the same subject from time to time. There are

[1] *Hypnotism*, 1943, New York.

also interesting differences from subject to subject in the neurological and psychological pattern which is induced. Some subjects fall at once, without any suggestion given to this effect, into a cataleptic and anaesthetic state, and others show few, if any, signs of this. Some patients, while hypnotized, seem to have a general clouding of consciousness, whereas in others there is a much greater degree of dissociation between one function which is depressed and others which are maintained in normal alertness and responsiveness. It is, however, probably true that all normal individuals, if fully co-operative, are capable of being put into a hypnotic state, and that with practice the state can be induced more and more easily and made progressively deeper.

To a certain extent, therefore, the main difficulty in the way of a more extensive use of hypnotism both for surgical anaesthesia and for psychotherapy might be overcome by greater medical interest in the subject. There is no evidence that in capable and conscientious hands hypnotism, repeated as many times as is desired, carries with it any physical or psychological danger to the patient. It is, however, most unlikely that more than a small proportion of doctors will be tempted to make any extended use of hypnotism in their practice. The technique of inducing the hypnotic state consists in telling the subject with the greatest conviction and impressiveness something that is not strictly true—for instance, that his limbs are feeling heavy, his lids droop, and he is becoming sleepy. Such things are said, and have to be said, in the hope that their saying will make them come true. Certain temperaments will find actions of this kind either antipathetic or ridiculous, and the technique cannot then be carried through with the inner certainty and self-assurance which are imperative for success.

Despite this and other limitations, however, hypnotism might well be more widely employed than it is at present, both as a harmless local anaesthetic in suitable subjects and in suitable circumstances and for the relief of psychoneurotic symptoms. Effective short cuts in psychotherapy are very urgently required. No one would now claim that psycho-analysis is the treatment of choice for more than a small minority of neurotic patients: the time it requires is a very practical difficulty. Nevertheless there is a large amount of neurotic illness which is not as yet effectively treated but is of its nature capable of treatment. For some of these sufferers hypnotism might offer substantial relief. Above all it seems desirable that hypnotism should be investigated more thoroughly along neurophysiological lines. The systematically applied interest of trained and critical minds might do much to clear up present obscurities, remove unfavourable impressions, and increase understanding of higher cortical activity in the brain.

TREATMENT OF PULMONARY STENOSIS

The surgical treatment of congenital heart disease has proved to be one of the most spectacular of recent therapeutic advances. It is only 10 years since Gross[1] first successfully ligated a patent ductus arteriosus, and the passing of this landmark led to attacks on the problems of coarctation of the aorta and pulmonary stenosis. In the latter condition the object of surgery must be to increase the oxygen saturation of the blood, which fails as a result of the stenosis to be fully exposed to the oxygen in the lungs. The "blue" blood from the right ventricle passes in part through the defect in the interventricular septum into the overriding aorta, thence into the systemic circulation. Experimental work in which the subclavian artery was used to make an artificial channel in coarctation of the aorta pointed the way to the successful treatment of the "blue baby." If some of the systemic blood could be deflected by an artificial "ductus arteriosus" into the pulmonary artery then oxygenation would be improved and some amelioration of the general condition might be expected. Eventually Blalock and Taussig[2] devised a brilliantly successful operation: this was the anastomosis of a systemic vessel, usually the subclavian, with the corresponding pulmonary artery. It has fully justified its conception, for it has provided relief for many patients suffering from a most distressing and hitherto incurable disability.

The technical skill and experience required for this form of surgery are apt to overshadow the careful work of investigation that must be carried out when assessing the suitability of patients for operation. To obtain successful results closely integrated team-work is necessary, and, in addition to the surgeon and anaesthetist, physicians, radiologists, and physiologists all have an important part to play. The recent publications in this country by Campbell,[3] by Baker, Brock, Campbell, and Suzman,[4] and by Rink, Helliwell, and Hutton[5] describe the problems which must be faced by those who undertake the surgical treatment of congenital heart disease, but clearly the results amply justify the risks taken. In the opening pages of this issue Mr. R. C. Brock makes another important contribution to the literature on the subject. In discussing the surgery of pulmonary stenosis he gives instances of the enormously increased capacity for exercise in children who have had operative treatment. Out of the first 50 patients operated on in Guy's Hospital two-thirds were benefited to an extent that was regarded as "almost perfect." This more than offsets a mortality of 14% and a similar proportion of indifferent results.

[1] Gross, R. E., and Hubbard, J. P., *J. Amer. med. Ass.*, 1939, **112**, 729.
[2] Ibid., 1945, **128**, 189.
[3] *Guy's Hosp. Rep.*, 1948, **97**, 1.
[4] *Brit. Heart J.*, 1949, **11**, 170.
[5] *Guy's Hosp. Rep.*, 1948, **97**, 48.
[6] *Surg. Gynec. Obstet.*, 1948, **87**, 385.
[7] *British Medical Journal*, 1948, **1**, 1121.
[8] *Lancet*, 1948, **1**, 988.

Blalock[6] has published a much larger series (610 cases) and reports a slightly higher death rate (17%); in three-quarters of his cases the results were described as excellent. If surgery required any further justification it would be given in Campbell's observations that only one in two "blue babies" will survive to their seventh year and that less than one in 10 will reach the age of 21.[3]

There are many technical problems in this branch of surgery. The standard Blalock operation has now been frequently described, but individual surgeons have modified the procedure in certain respects. Brock now prefers a left postero-lateral approach, for it has the advantage of permitting full exposure of the pericardium, and it allows a choice of a subclavian–pulmonary or pulmonary–aortic (Pott's operation) anastomosis. Stenosis of the pulmonary valves themselves has been recognized, and deliberate division of the valvular obstruction has been successfully carried out by Brock,[7] who reported three cases in this *Journal* last year, and by Holmes Sellors.[8] This has required an intracardiac approach, and Brock has now developed the operation further by punching out or dilating the narrowed channel in selected cases of infundibular stenosis. This method of establishing a more normal circulation may prove to have advantages over the "artificial ductus." The surgery of pulmonary stenosis is now well established, for the immediate results are more satisfactory than anyone with knowledge of the condition could reasonably have hoped for, but time will decide whether the full benefits of either type of operation can be maintained indefinitely as the growth of the patients progresses.

DIPHTHERIA IN SCOTLAND

The advantages of the co-operative form of inquiry are many, among them being the fact that investigations by several teams of workers permit the most to be made of what might individually have formed a relatively useless experience. In recent years the Infectious Diseases Subcommittee of the Scientific Advisory Committee of the Department of Health for Scotland has produced two reports on cerebrospinal fever, and in a third it has accumulated statistics on the behaviour of diphtheria in Scotland during 1942.[1] Such analyses are to be encouraged, for, despite the great changes that have occurred in the severity and mortality of infectious diseases in the last 20 years, readers still have to depend too often upon the descriptions of the disease enshrined in such canons as Ker's earlier editions.

A total of 4,272 cases—about 46% of all those admitted to hospital with diphtheria in Scotland during 1942—came under review, and the first point to be noted is that despite the high prevalence (70%) of gravis infections the mortality was less than 3%; even in the youngest age groups (0–4 years) the mortality was only 6%. The type of organism was certainly important, for in gravis infections the fatality rate was 4%, whereas the rates for intermedius and mitis infections were 0.8% and 1.5% respectively. The low incidence of toxic complications and the infrequency of extensive membrane formation were also indications of the comparative mildness of the disease. Nerve palsies occurred in 4% and circulatory complications in a further 7% of the patients. The former figure is indeed surprisingly small, though it could be argued that in young patients mild degrees of palatal and ocular paralysis might escape attention. Nevertheless, the rate in children under 10 years was twice that in the older patients. The fatality rate in patients who developed circulatory complications was 22%, and in patients with nerve palsies only the rate was 4%. The acquisition of some basic capacity to withstand diphtheria as age advanced was shown by the steady reduction in toxic complications in each succeeding age group; in fact, over 70% of the affected patients were under the age of 10 years.

Membrane was confined to the tonsils in nearly 75% of the cases, and the fatality rate in this group was 1%—a result in accordance with experience, for such cases are not usually severe. When membrane extended to the pharynx the rate increased to 13%. Further analysis of the data collected about the site of infection brought to light two interesting facts. In the first place the gravis types produced the highest proportion of pharyngeal cases—a surprising result, since it conflicts with McLeod's[2] suggestion that membrane formation is greatest in mitis infections. But perhaps of greater interest was the differential increase in mortality produced by the different types when membrane extended beyond the tonsils. In pharyngeal infections with intermedius and mitis organisms the mortality was 26 times greater than in the relatively innocuous tonsillar infections. On the other hand, with the gravis organism the mortality of pharyngeal infections was nine times that of tonsillar infections. Thus the tonsils were much less able to resist toxin when the gravis organism was present. When infections with the gravis types extended beyond the tonsils the fatality rate was 17%.

In the second part of the report the course of the disease in inoculated and uninoculated patients is compared. In 1942 diphtheria immunization had only recently become a matter of national importance, and the number of patients who had been inoculated was only one-quarter of the total, the majority of them being children of or below school age. With the disease taking a comparatively mild form, it might have been expected

[1] *Diphtheria.* Report by the Infectious Diseases Subcommittee of the Scientific Advisory Committee, Department of Health for Scotland, 1948. H.M.S.O.
[2] McLeod, J. W., Orr, J. W., and Woodcock, H. E. de C., *J. Path. Bact.*, 1939, 48, 99.

that the benefit of immunization would not be very obvious; nevertheless, the inoculated patient fared better in every way. Perhaps the most noticeable effect was the reduction of the fatality rate in patients with toxic complications from 27% to 9%. The occurrence of such complications was of course less frequent in the inoculated group, and yet the incidence of gravis infections was actually higher, especially among the younger children.

Public health workers will be glad to have further evidence of the efficacy of diphtheria immunization, but they may think that the great merit of this report is the authentic information given about the character of an infectious disease at a particular time. If the Scottish Committee is searching for fresh work it might well undertake to supply similar information on the behaviour of other infectious diseases.

THE MANAGEMENT OF INTRACTABLE PAIN

While the commoner analgesics generally control pain in acute illnesses, their use in more chronic conditions often presents many obvious disadvantages, chief of which is the development of tolerance and addiction. In the treatment of such disorders as inoperable malignant disease, causalgia, painful amputation stumps, and crippling arthritis it is natural that attempts should have been made to provide relief by surgical interruption of nerve pathways, and operations such as neurectomy, sympathectomy, procaine nerve-block, and chordotomy have all had some success in the past. In a proportion of patients treated surgically, pain is apt to return after a variable interval, either because pain impulses utilize alternative pathways or because the operation itself established new foci of irritation in the central nervous system.[1] Following Rowbotham's[2] treatment of facial pain by intramedullary tractotomy, Crawford[3] has used this operation to control persistent pain in other conditions, chiefly inoperable cancer. In a series of 11 cases there were three deaths, two of which occurred in the only patients subjected to the bilateral operation. The chief limitations of this method are that the operation is a severe one, demanding highly skilled neurosurgery, and it must be bilateral to provide relief in many cases—e.g., visceral growths. For the present, therefore, this operation will probably be confined to those cases of severe intractable pain in which more conservative methods have proved inadequate.

Approaching the problem in another way, Freeman and Watts[4] have found that prefrontal lobotomy helps these patients. They emphasize that pain is essentially a psychosomatic phenomenon—a sensory perception which, signalling a threat to the safety of the organism, produces profound and distressing psychic reactions. While the actual threshold of perception for pain impulses is fairly constant in all normal people,[5] this psychic reaction varies widely with individual make-up. Prefrontal lobotomy leaves pain pathways intact, so that pain perception remains. The normal physical reactions to pain, such as pupillary dilatation, elevation of blood pressure, pallor, and sweating—responses mediated through the sympathetic nervous system—still occur, as may be demonstrated by the muscle-ischaemia test performed on patients who have been subjected to lobotomy.[6] But the operation largely abolishes foresight, concern for the future, preoccupation with self, and the dreadful anxieties which so often accompany severe pain. The patient continues to feel his original pain, but that pain is no longer of greater significance than the appreciation of any other sensory stimulus. The emotional colouring which makes pain so distressing is eliminated, and with it the patient's fear of the future consequences of his disease. The operation had the same effect on incapacitated depressive psychotic patients who complained of pain out of all proportion to the somatic disorders present, examples of what Freeman and Watts call "psychalgia."

Though the technique of the operation is relatively simple, frontal lobotomy causes profound temperamental changes, some of which are socially undesirable. This treatment, therefore, must be recommended with caution, unless the patients are definitely psychotic, such as those in Freeman and Watts's second group.[7] However, the effects of prolonged pain for which no radical relief is possible and the anxieties inseparable from incurable disease are in themselves almost certainly more destructive than the effects of this admittedly imperfect operation. More widespread trial of the method is therefore justified, particularly in patients suffering from inoperable cancer.

Elsewhere in this issue Dr. E. B. Strauss again stresses that all pain is, eventually, a psychic event and an emotional experience. Psychogenic pain—that is, pain which continues in the absence of organic disease—is often an important factor in the persistence of an unstable psychic equilibrium. Its removal by psychotherapy may therefore precipitate the development of a previously latent psychosis in which the guilt factor is prominent. In the same way pain persisting after its original cause has apparently been cured may conceal an already established drug addiction. The diagnosis of psychogenic pain should not be loosely employed, for it is dangerous unless all possibility of organic disease has been carefully eliminated. Prolonged pain from any cause can lead to the development of psychic changes and increased susceptibility to all painful stimuli: resistance is diminished by suffering. In such cases good response to suggestion and innocuous injections may appear to confirm the diagnosis of psychogenic pain, whereas such behaviour really indicates that the pain has a somatic origin. Paradoxically, as Strauss mentions, organic rather than psychogenic pain is the more amenable to psychotherapy, particularly to hypnosis. Salter[8] maintains that hypnotic and post-hypnotic phenomena are conditioned reflexes. If this view is confirmed there is no reason why an individual should not be trained to provide the appropriate stimulus himself. Thus by autohypnosis any sensory perception, including that of pain, could be abolished at will. These are novel concepts, but they are worth considering, for the relief of suffering without the disadvantages of mutilating surgery or disintegration of the personality would be a true conquest of pain.

[1] Bingham, J. A. W., *British Medical Journal*, 1948, **2**, 334.
[2] Ibid., 1938, **2**, 1073.
[3] *Arch. Surg., Chicago*, 1947, **55**, 523.
[4] *Ann. intern. Med.*, 1948, **28**, 747.
[5] Hardy, J. D., Wolff, H. G., and Goodell, H., *Proc. Ass. Res. nerv. ment. Dis.*, 1943, **23**, 1.
[6] Craig, J. Donaldson. Personal communication.
[7] Ström-Olsen, R., and Tow, P. M., *Lancet*, 1949, **1**, 87.
[8] *What is Hypnosis?* 1944, New York.

FAMILIAL HEPATIC CIRRHOSIS

In 1903[1] Parkes Weber described two cases of hepatic cirrhosis in the same family, and since then many examples of familial cirrhosis have been reported.[2-4] In most instances the disease affected siblings born of healthy parents. Débré[5] recognized three clinical variants of the disease, the first being characterized by ascites, the second by biliary cirrhosis and jaundice, and the third by splenomegaly and portal hypertension. The third type, in which the clinical course resembles that of Banti's syndrome, is sometimes referred to as "familial anicteric anascitic cirrhosis." Elsewhere in this issue Dr. A. M. Nussey reports a family in which three of five children suffered from this disease, and he adduces convincing evidence that the cirrhosis in these cases was a manifestation of Rh isoimmunization. The father of the family was heterozygous Rh-positive and the mother Rh-negative. The eldest child, who was Rh-negative, and the second child, who was Rh-positive, were healthy. The remaining three children were Rh-positive, and all three had splenomegaly and repeated haematemeses. None of the patients had been jaundiced in the neonatal period.

It is conceivable that there was a fortuitous genetic link between the inheritance of the Rh factor and the liver defect in these children, but the sparing of the first Rh-positive child is much more in keeping with the natural history of haemolytic disease of the newborn. Many of the families reported before the discovery of the Rh factor showed similar freedom in the firstborn.[2-5] Moreover, it is known that Rh immunization gives rise to liver disease. Henderson[6] described diffuse hepatic cirrhosis in macerated foetuses and regarded this as being the most severe form of haemolytic disease, and later workers have confirmed that liver damage is by no means uncommon.[7-10] It has also been shown that congenital obliteration of the bile ducts[11] and hepato-splenomegaly in childhood[12] may develop after haemolytic disease of the newborn. It seems probable, therefore, that familial anicteric cirrhosis may well prove to be a manifestation of Rh incompatibility. This discovery may help to separate cases of non-familial congestive splenomegaly from the mixture of entities labelled Banti's syndrome.

ANTHRAX AND AUREOMYCIN

The potentialities of the newer antibiotics are now being rapidly explored. We have recently published a report by Drs. J. F. L. Walley and T. V. Cooper[13] of a case of undulant fever treated by chloramphenicol ("chloromycetin") and an account of the treatment of urethritis with "aureomycin" by Drs. R. R. Willcox and G. M. Findlay.[14] In this issue of the *Journal* Professor J. C. Cruickshank describes work which indicates that aureomycin does not control experimental melioidosis. In Mexico, Ruiz Sanchez and his colleagues[15] have brought forward evidence to show that anthrax can be readily controlled by the oral administration of aureomycin. Tests *in vitro* on six strains of anthrax bacilli show that aureomycin inhibits the growth of the anthrax bacillus in concentrations of 5 μg. per ml. Penicillin *in vitro* is more active, for the inhibitory concentration is 0.02 μg. per ml.; that of streptomycin is 0.5 μg. and of chloromycetin 50 μg. In doses of 10 mg. per kg. of body weight aureomycin protected guinea-pigs from a fatal infection by anthrax. In two human patients suffering from malignant pustule good results were obtained. The doses used were 100 mg. per kg. of body weight by mouth for 3½ to 5 days, followed by 50 mg. per kg. of body weight for a further two days. The administration of aureomycin was followed by a rapid improvement in the clinical condition and a prompt fall in temperature. Anthrax bacilli could not be isolated from the lesions three and four days after the beginning of aureomycin treatment.

1 *Edinb. med. J.*, 1903, **14**, 114.
2 Byrom Bramwell, *Clinical Studies*, 1910, **8**, 347.
3 Langmead, F., *Proc. R. Soc. Med.*, 1934, **27**, 939.
4 Bateman, D., ibid., 1934, **27**, 1327.
5 Ibid., 1939, **32**, 1173.
6 *Arch. Dis. Childh.*, 1942, **17**, 49.
7 Baar, H. S., *Brit. med. Bull.*, 1946, **4**, 178.
8 Wiener, A. S., *Amer. J. Dis. Child.*, 1946, **71**, 14.
9 Cappell, D. F., *Glasg. med. J.*, 1944, **142**, 125.
10 Parsons, L., *Lancet*, 1947, **1**, 815.
11 Skelton, M. O., and Tovey, G. H., *British Medical Journal*, 1945, **2**, 914.
12 Drummond, R. J., and Watkins, A.G., ibid., 1946, **1**, 984.
13 *British Medical Journal*, 1949, **2**, 265.
14 Ibid., 1949, **2**, 257.
15 *Medicina*, 1949, **29**, 211.

LUPUS ERYTHEMATOSUS

Acute lupus erythematosus was first described by Kaposi[1] in 1872, and for twenty or thirty years thereafter it was regarded as a primary dermatological condition, the accompanying general symptoms being put down to the toxic effects of severe skin involvement. Morbid anatomical definition of the disease was difficult, since necropsy findings were very variable, but Libman and Sacks[2] made the valuable discovery of an unusual form of endocarditis characterized by flat pinkish vegetations occurring at the base of the valves, usually beneath the posterior cusp of the mitral valve. Small necrotic foci are found in the myocardium, but it is difficult to assess the severity of the cardiac condition during life because of the many symptoms. In a recent review Humphreys[3] has suggested that electrocardiographic studies are useful, though the results may be confusing if a pericardial effusion is present. In 1935 Baehr, Klemperer, and Schifrin[4] demonstrated widespread lesions of blood vessels and serous surfaces, particularly degenerating and necrotic lesions associated with thrombosis and haemorrhage. They noted a glomerular change in the kidney, with a peculiar hyaline thickening of the basement membrane known as the "wire loop" lesion. In all areas of the body there are changes in the collagenous portions of fibrous tissue, but the exact nature of these is undetermined. Klemperer[5] believes that they are an important feature of the disease.

Widespread connective tissue changes occur in generalized sclerodermia, rheumatic fever, and periarteritis nodosa, as well as in lupus erythematosus. This suggests the possibility of a common cause, but the evidence in favour of

1 *Arch. Derm. Syph., Wien*, 1872, **4**, 36.
2 *Arch. intern. Med.*, 1924, **33**, 701.
3 *Ann. intern. Med.*, 1948, **28**, 12.
4 *Trans. Ass. Amer. Phys.*, 1935, **50**, 139.
5 *Ann. intern. Med.*, 1948, **28**, 1.
6 *Arch. Derm. Syph., Chicago*, 1933, **28**, 765.
7 Wu, T. T., *Virchows Arch.*, 1937, **300**, 373.
8 *Arch. Path.*, 1926, **1**, 1.

such a theory is slender. Bacteriological examination of many tissues before and after death has not revealed any organism as the immediate cause of the disease, and the suggestion that it was tuberculous in origin—seriously considered over many years—was finally disproved by Keil[6] in 1933. Some authors have considered hypersensitivity to bacteria or bacterial products as a probable cause. The fibrinoid collagen changes so frequently found in lupus erythematosus are held to be evidence for this theory, but such changes have long been known to occur in bacterial infections, in inflammations due to chemical and physical irritation, in compensated hypertension, and even as a result of simple trauma such as squeezing the skin.[7] Fibrinoid collagen alteration cannot therefore be regarded solely as an expression of hypersensitivity.

Another microscopic change which is a feature of both lupus erythematosus and generalized sclerodermia is an alteration in the homogeneous ground substance, which is composed of a variety of mucoproteins. This change may prove to be a guide to the cause of the disease. It is known that the colloidal state of the ground substance is affected by hyaluronidase and that various female sex hormones seem to exert an opposite effect. Wolbach and Howe[8] have studied the action of ascorbic acid on the ground substance and its relation to collagen fibrin formation. But such evidence as there is about the cause of lupus erythematosus is fragmentary and obscure; there is ample scope for further investigation.

RESECTION IN PULMONARY TUBERCULOSIS

During the past few years pulmonary resections have been successfully carried out in an increasing number of cases of tuberculosis, and it is now agreed that such operations have a restricted but important place in the treatment of this disease. The concept of excision is not new; Macewen[1] removed a tuberculous lung in 1895, the patient being alive and well forty years later, but only sporadic cases were reported until those of Jones and Dolley[2] in 1939. Since then several papers on the subject have been published, chiefly in the American literature, a recent example being a review of 39 cases by Clagett and Seybold.[3] These authors carried out 14 lobectomies and 15 pneumonectomies; four patients have died and five have active tuberculosis, but 19 are apparently well. In most of these cases the follow-up period has been short, but it has been as long as four years in some. No other effective treatment was available for the majority of the patients. More recently Holmes Sellors and Hickey[4] in this country have described their results in a series of 78 patients, of whom 11 died. They performed pneumonectomy in 33 cases and lobectomy in 45. Follow-up histories are not available, but there is no evidence of further tuberculous infection in the surviving patients.

There are two groups of cases in which resection is indicated. The first are those in which collapse therapy has failed. Examples in the series of Clagett and Seybold include a patient with a thick-walled cavity in the upper lobe persisting in spite of a satisfactory artificial pneumothorax, and a patient with a dorsal cavity in the lower lobe not responding to pneumoperitoneum and phrenic crush: for both of these a lobectomy was found adequate. In another patient the sputum remained persistently positive in spite of an adequate revised thoracoplasty; there was no tracheobronchial ulceration, disease in the opposite lung, or recognizable cavitation, and a pneumonectomy was performed.

The second group consists of those cases in which experience has shown that collapse therapy is unlikely to succeed. The dangers of pneumothorax with its attendant atelectasis in cases with bronchial stenosis are well known, and this relatively unusual manifestation is perhaps the most widely accepted indication for resection; it was present in 13 patients in this series. Cases of tuberculoma, of tuberculous bronchiectasis, and of associated carcinoma are included in the series, but in such conditions the diagnosis of tuberculosis can usually be made only on the results of histological or bacteriological examination of the excised specimen, and the operation is performed either as an exploration or without knowledge of the accompanying tuberculous infection. In cases with giant cavities, large tension cavities, much destruction of lung tissue, or repeated severe haemoptyses, excision is a desperate resort often giving gratifying results. None of the cases in this series were in children, but before growth is complete resection may occasionally be the operation of choice, since thoracoplasty leads to such severe deformity. The indications accepted by Holmes Sellors and Hickey are very similar.

Complications are frequent. As after any pulmonary resection, a broncho-pleural fistula is serious. Ulceration of the bronchial stump commonly occurs, with a positive sputum as a result, but it usually responds to treatment with local silver nitrate or systemic streptomycin. More important, and indeed the greatest drawback to this method of treatment, is spread of disease to remaining lung tissue or reactivation of quiescent tuberculosis. This may occur either early, immediately after operation, or several months later. In recent cases streptomycin has been used as a prophylactic and has given encouraging results, but it seems unlikely that it will greatly diminish the incidence of late spread, especially as resistant strains of bacilli develop after prolonged treatment. In this connexion the figures of Bailey[5] are remarkable: only one patient out of 100 given streptomycin developed contralateral spread. It seems likely that one of the most valuable uses for streptomycin will be as a cover for surgical treatment: its property of reducing the complications of resection should be particularly welcome.

The Queen has graciously consented to accept the Honorary Fellowship of the Royal College of Obstetricians and Gynaecologists, of which she is the Patron, and has intimated that she will attend the College in the autumn to be formally admitted. Her Majesty has sent a donation of £1,000 to the appeal which is being made by the College for funds urgently needed to meet the financial demands of its ever-widening activities.

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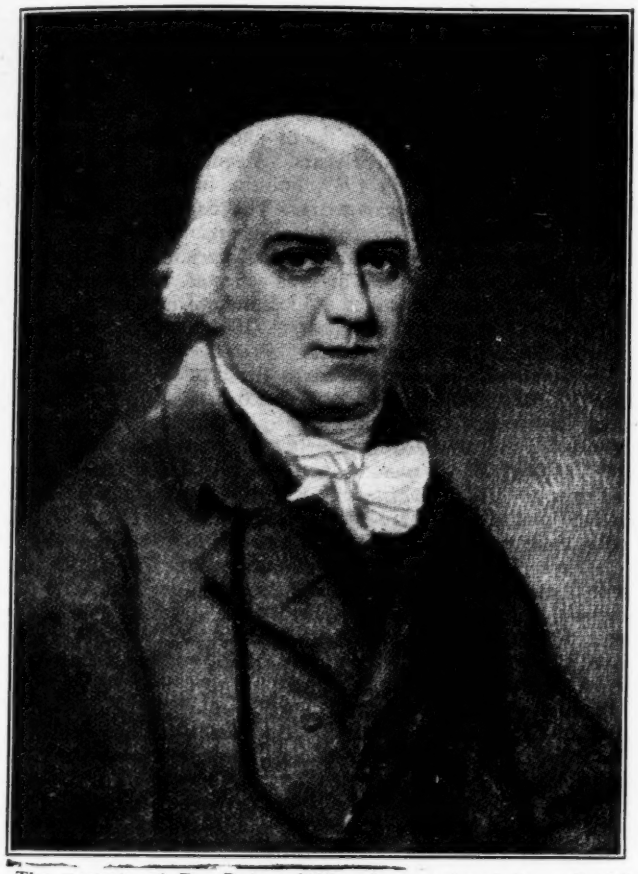
1 *British Medical Journal*, 1906, **2**, 1.
2 *J. thorac. Surg.*, 1939, **8**, 351.
3 *Proc. Mayo Clin.*, 1948, **23**, 81.
4 *Thorax*, 1949, **4**, 82.
5 Quoted by H. Morriston Davies in *Thorax*, 1948, **3**, 211.

ROBERT WILLAN, DERMATOLOGIST

The London County Council has affixed to No. 10, Bloomsbury Square, now part of a hotel, a tablet commemorating the residence there of Dr. Robert Willan (1752–1812), physician and dermatologist. Dr. Willan, who was a native of Yorkshire, was educated at Sedbergh Grammar School and received his medical training in Edinburgh. After some practice in Darlington, during which he wrote a treatise on the sulphurous waters of Croft and Harrogate, he came to London and was appointed physician to the public dispensary in Carey Street, Lincoln's Inn, on its establishment in 1783. He held this appointment



The portrait of Dr. Robert Willan is reproduced from *British Masters of Medicine*, edited by the late Sir D'Arcy Power, by kind permission of the publishers, *The Medical Press*.

for twenty years, after which he was made consulting physician and life governor.

Willan was the first physician in this country to classify the diseases of the skin in a clear and intelligible manner and to place their nomenclature on a satisfactory basis. His classification gained him the Fothergillian medal of the Medical Society of London in 1790. In 1791 he began a series of monthly reports on the weather and prevailing diseases of the metropolis, continuing this for several years. His great work, however—and one of lasting value—was his *Description and Treatment of Cutaneous Diseases*, the first part of which was published in 1798, and the last, posthumously, in 1814.

Willan lived in Bloomsbury Square, then the abode of nobility and fashion, until 1810, when symptoms of pulmonary tuberculosis and dropsy developed and he went to Madeira, where he died in March, 1812. In the *Gentleman's Magazine* for that year he is described as "one of the best and noblest of human kind, possessed of every virtue that can ennoble or adorn. . . . In his profession he was beloved almost beyond example. . . . He possessed almost every intellectual attainment that can be comprised within the finite compass of the human mind."

INTERNATIONAL VETERINARY CONGRESS

ANIMAL DISEASES COMMUNICABLE TO MAN

An International Veterinary Congress was held in London during the second week in August under the presidency of Sir DANIEL CABOT, formerly Chief Veterinary Officer of the Ministry of Agriculture. Delegates from 53 countries attended, and the discussions covered the whole field of animal health, including the control of bovine tuberculosis, foot-and-mouth disease, vaccination, virus diseases of cattle and horses, nutritional factors, veterinary surgery, and animal husbandry in relation to public health. The addresses included one by Lord BOYD-ORR on the world food situation. He declared that modern agricultural and engineering science could double world food production in less than twenty-five years, provided governments would co-operate in a world plan. Loss in human food due to preventable animal diseases probably ran to millions of tons a year. The veterinary profession, which had here a great opportunity, needed a strong international organization on the lines of the World Health Organization through which governments could co-operate in the elimination of preventable diseases on a world scale.

Diseases of Household Animals

One of the sessions, which was shared with the National Veterinary Medical Association, discussed diseases of household animals communicable to man. Dr. J. WINSSER, of Leiden, said that tuberculosis of dogs and cats was rather frequent in the Netherlands, and every animal suffering from this disease was a potential danger to human health. Large dogs were more susceptible, not on account of breed but because of the likelihood of under-nutrition. Among cats Siamese were most susceptible. Infections with the human type of tubercle bacillus predominated in dogs, whereas in cats infections of this type were rare. Both dogs and cats might spread enormous numbers of bacilli by coughing, by their faeces and urine, and by the secretion products of skin ulcers. Therefore it was important that members of the veterinary profession should diagnose the disease as early as possible and get the owner's consent to the destruction of the animal.

Leptospirosis was an important disease in man and dogs in the Netherlands. He mentioned in particular *L. canicola* infections. During the last fifteen years 49 human cases of this infection had been recognized at the Institute for Tropical Hygiene, Amsterdam, and of these six (including one fatal case) showed jaundice. Salmonella infections occurred frequently in dogs, less so in cats. The infected dog during disease and convalescence was a transient carrier, spreading salmonella organisms by means of faeces and urine, and every strain of salmonella was a potential danger to human health. In Sweden two workers had isolated salmonella organisms from the faeces of seven members of a family suffering from gastro-enteritis and from the blood of the family dog. Streptococcosis was a not uncommon infection in dogs and cats both in England and in Holland. There was strong evidence that milk-borne "sore throat" epidemics in man were caused by the streptococci residing in the cow's udder.

Among parasitic skin diseases he mentioned microsporum infections (*M. canis*), more common in cats than in dogs, and communicable to man. Dr. Winsser had observed a stubborn infection among Persian cats, from which some adult persons had contracted the disease. Tricophytia was not a rare disease in dogs.

A condition frequently met with food animals as well as in dogs was echinococcosis. The disease was contracted not only by direct contact between animal and man but by contamination of market produce with dogs' faeces. The worm eggs were resistant and might remain fertile for at least a year. Meat inspection regulations had diminished the prevalence of the disease, and there was a continuous decrease in the number of cases in the Netherlands.

In some discussion on this paper Mr. H. W. SMITH, formerly of the London School of Hygiene and Tropical Medicine, mentioned that in 500 specimens of canine faeces salmonella

organisms were isolated from 1%, and from 1.4% of a similar number of samples of feline faeces. Household animals should always be considered as possible sources of outbreaks of salmonella infection, and the practice of leaving cats in shops where there was uncovered food was strongly to be deprecated. Mr. L. K. WHITTEN, of New Zealand, mentioned the serious problem of hydatid disease in that country, both in man and in animals. In a population of 1¼ millions about 100 human cases were seen every year. Some 12% of these were fatal. A campaign had been started to spread knowledge of the cause and control of the disease.

Dr. MARGRIT SCHEITHLIN (Zurich) referred to the prevalence in Switzerland of microsporum infections derived from small animals. Dr. JOAN JOSHUA said that, while transmissibility of disease from animals to man was certainly established, the danger should not be exaggerated. Tuberculosis in small animals in this country was decreasing with the increase in the pasteurization of milk. Leptospirosis had a public health significance, as had salmonellosis, but it was a common experience of practitioners dealing with small animals to be told that children had contracted "worms" from a cat or dog and that the animal must be destroyed, whereas it was often entirely free from parasites. Ringworm contracted from a cat, particularly a blue Persian, was always a possibility. Dr. OLGA UVAROV said that during the last fifteen years she had encountered six cases of sarcophytic mange in women and one in a child as a result of handling dogs, and had also come across one case of ringworm transmitted by an animal.

Tapeworm Infestation

Dr. JOH PETERS (Rotterdam) said that during the invasion of his country the German soldiers often brought with them dogs from the eastern parts of Europe, and these animals frequently harboured tapeworms which contaminated Dutch livestock. The clandestine slaughter on the black market fostered the spread of the parasites. This had now been cleared up, but in man the results of this heavy infestation from dogs could not yet be assessed.

Dr. R. F. MONTGOMERIE, closing the discussion, said that he wondered whether the title of it might not be turned round so they could consider diseases of man communicable to animals. The glass shields at the Zoological Gardens were not designed to protect visitors from animal infection, but to protect the animals from the visitors.

The same subject of transmissibility figured in other papers at the Congress. A Californian delegate, Mr. W. R. HINSHAW, spoke of ways in which the veterinary surgeon could assist in reducing human as well as animal loss from salmonellosis. Those engaged in small animal practice should devote some time to studying this group of diseases as possible sources of illness in cats and dogs, both to reduce loss from salmonellosis in the animals and to prevent human cases by transmission from carriers. Dr. J. N. RITCHIE, of Edinburgh, discussed tuberculosis in cattle from the public-health aspect. In 1948 the number of cattle in tubercle-free herds in Great Britain was 1,704,000 and the amount of milk sold from such herds was 354 million gallons, as compared with 141.6 million gallons five years ago. In another paper Mr. F. BLAKEMAN discussed the relation between human and porcine influenza. He said that the possibility of an exchange of viruses between pigs and the human population must be seriously considered. "Hog flu" was first recognized as an entity at the time of the 1918 pandemic of human influenza. Neutralizing antibodies to the pig virus were later demonstrated in human beings, and the possibility of a relationship between the two conditions must not be lightly dismissed.

Political questions were not in order at the Congress or the N.V.M.A. meeting which followed it, but one session of the latter was devoted to the organization of veterinary practice. Emphatic and uncontested views were expressed against the nationalization of the profession. One speaker declared that that would be the direst calamity that could befall them. He was certain that there were other ways of developing a service which would retain professional freedom and yet enable the practitioners to fulfil their obligations to the utmost.

MORTALITY TRENDS IN THE WAR YEARS

REGISTRAR-GENERAL'S STATISTICAL REVIEW

Two volumes from the Registrar-General's office complete the medical statistical review of the war years. One of them is the medical text for the six years 1940–5 and the other the medical tables for 1944[1] (the tables for 1945–7 have already been published). The period covered by the first volume corresponds, except for a few months at each end, with the period of the war. The time was an abnormal one from a statistical viewpoint, owing to evacuation and other movements of population, to the continued call-up of males, and later of females, and, at the close, to demobilization.

All of the deaths, except some 57,000, were of civilians. Enemy attack accounted for 23,268 deaths in 1940 and nearly as many in 1941, but after that the number was comparatively small, except for 9,000 deaths in 1944 due to long-range projectiles.

One result of the war was the alteration of the sex ratio in the mortality rate. The ratio of male to female mortality has been rising for a hundred years. A century ago it was 109; it rose steadily to 134 in 1939, but the increase was greatly accelerated during the war years. The continued call-up of young fit males and the subsequent discharge of the unfit meant a lowering of the physical standard of certain groups of the male civilian community. This was reflected in a higher mortality as compared with other groups and with females. Thus, if the female mortality be taken as 100, the male mortality for ages 20–25 approached 200.

The standardized (as opposed to the crude) death rate fell from 9.8 per 1,000 living in 1938 to 9.0 in 1945 in the case of males, and from 7.4 to 6.4 in the case of females. The number of people who were over 65 when the war began was 897 per 10,000 at all ages, and when the war ended the number had risen to 1,146. During the war 111 male and 528 female centenarians died. Three of the females were reputedly 108, and a male (who died in Greater London in 1941) was 112.

The war had little effect on diseases of the heart. Deaths from acute and subacute bacterial endocarditis averaged 1,016 annually during the five years before the war and 868 during the war years. The deaths due to rheumatic fever in the four years immediately before the war showed an annual average of 1,000; during the war this figure fell to 638.

Among other wartime effects is to be noted the sharp decline in deaths from alcoholism. Deaths attributed to alcoholism, or to disease said to be due to alcoholism, were 144 in 1940. In the last year of the war they numbered only 26, and deaths to which alcoholism was a contributory cause fell during the same period from 286 to 105. Suicides also declined—a familiar tendency in wartime.

Maternity and Child Welfare

The reduction in the number of deaths from causes connected with pregnancy and child-bearing continued uninterruptedly throughout the war. A remark is made on age as affecting maternal risk. At ages under 25 the risk of death from a complication of childbirth or the puerperium is one in a thousand; by 35 it has reached two in a thousand, and by 40 three. The pronounced improvement in infant mortality which occurred in 1942 was confined to two distinct age periods, the first week and the second half of the first year. Measles, scarlet fever, and whooping-cough had low death rates during the war years. The number of deaths from diphtheria, which in 1935–9 averaged nearly 3,000 annually, fell progressively during the six years of war from 2,480 to 722. It is mentioned that to the immunized child aged 1–5 the risk of dying from diphtheria is less than one-thirtieth of the risk to the non-immunized, and at ages 5–15 the risk is one twenty-fourth.

Acute poliomyelitis and polio-encephalitis notifications continued evenly during the war years. There was no epidemic year such as immediately preceded and immediately followed the war.

[1] *The Registrar-General's Statistical Review of England and Wales for the Six Years 1940–5.* Text, Vol. 1, Medical. 6s. 6d. net. *The Registrar-General's Statistical Review of England and Wales for the Year 1944.* Tables. Part I. Medical. 5s. 6d. net. London: H.M. Stationery Office. 1949.

It is pointed out that from 1926 to 1943 there was a progressive change in the age distribution of deaths from this disease. An increasing proportion occurred amongst adults and a diminishing proportion amongst young children. This change was intensified in 1944–5, when only 17% of the deaths were of children under 10, compared with 57% in 1926–30, and the proportion at ages over 25 rose to nearly one-half.

In connexion with the deaths of children, it is startling to note the large proportion due to violence, most obviously road accidents (deaths from war operations are excluded from these figures). For children between 5 and 10 during the war years the rate of deaths from road accidents was something like 250 per million living in the case of boys and 120 in the case of girls. In the medical tables the number of deaths of children up to 15 caused by motor vehicles in 1944 is given as 1,133, slightly less than the number of deaths from scarlet fever, whooping-cough, and diphtheria combined. Nearly one-third of the pedestrians killed on the roads were children under 10. In 1945 violence accounted for more deaths of boys of 10–15 than any other cause. Among girls of the same age, violence, which was fourth in frequency as a cause of death before the war, took second place and was exceeded by tuberculosis.

Death Certification

Much is said in the review about defects in certification of causes of death. In one year something like 14,000 inquiries had to be sent out to medical practitioners to clarify the cause of death for the purpose of statistical classification. Improvement of quality, says the compiler of the review, is to be sought first in accuracy of diagnosis by improving the diagnostic services during life and by performing necropsy more frequently in doubtful cases after death. An important cause of error is the omission from the certificate of the real cause of death because its appearance might be unpleasant or inconvenient to relatives. This problem will have to be tackled boldly if real statistics of syphilis and diseases of syphilitic origin are to be secured. Deaths from syphilis have declined progressively from 1938, when they numbered 3,463, to 1945, by which year they had fallen to 2,395. Deaths under or associated with anaesthesia during the six years numbered 4,775, but it is impossible from the certificate to distinguish between deaths due to the operation and deaths caused by the anaesthetic itself.

Defects in certification of causes of death by coroners are also mentioned, especially failure to state whether a fatal accident occurred in a house, a public building, or out of doors, so that the compilation of the number of accidents in the home has to be based on assumptions and conjectures.

BRITISH PHARMACOPOEIA COMMISSION

APPROVED NAMES

In order to avoid the difficulties which arise from the multiplication of names for the same medicinal substance, the General Medical Council has adopted the practice of recognizing as approved names certain non-proprietary names which may be used freely by manufacturers. The approved names are devised or selected in the first instance by the British Pharmacopoeia Commission, and should any of the drugs to which these are applied be eventually described in the *British Pharmacopoeia* the approved name would be its official title. On the other hand, the recognition of an approved name does not imply that the substance will necessarily be included in the *British Pharmacopoeia.*

The Pharmacopoeia Commission is prepared to consider requests from manufacturers and others for approved names for products which appear likely to come into established use. Such requests should be accompanied by reports of pharmacological and clinical investigations on the drug concerned and suggestions for a suitable name, having regard to the need to avoid similarity with existing trade marks and other current names. In the selection of an approved name the Nomenclature Committee of the Commission will be prepared to consult with authorized representatives of the manufacturer concerned, but the final decision will rest with the Pharmacopoeia Commission. If a manufacturer should desire to issue under a proprietary name a drug for which an approved name has been provided, it is strongly recommended that the label shall bear the approved name in letters as conspicuous as those in which the proprietary name is printed or written.

The following general principles are stated for guidance in devising new names : (1) Names should preferably be free from any anatomical, physiological, pathological, or therapeutic suggestion. (2) An attempt should first be made to form a name by a combination of syllables from the scientific chemical name, in such a way as to indicate the significant groupings of the compound. (3) Names should not exceed four syllables. (4) Names should be distinctive in sound and spelling, and should not be liable to confusion with names already in use. (5) Names which are difficult to pronounce or to remember should be avoided. (6) The addition of a terminal capital letter or number should be avoided. (7) Names used in the *United States Pharmacopoeia,* the *British Pharmaceutical Codex,* or in *New and Non-Official Remedies* should receive preferential consideration. (8) The following terminations should be used : -ine (Latin -ina) for alkaloids and organic bases ; -in (Latin -inum) for glycosides, glycerides, and neutral principles ; -ol for alcohols and phenols (-OH group) ; -al for aldehydes ; -one for ketones and other substances containing the CO group ; -barbitone or -itone for drugs of the barbiturate group ; -caine or -aine for local analgesics.

Communications relating to approved names should be addressed to the Secretary, British Pharmacopoeia Commission, 44, Hallam Street, London, W.1.

Reports of Societies

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

MENTAL HOSPITAL ORGANIZATION

Delivering the Presidential Address to the Royal Medico-Psychological Association at York on July 20, Dr. J. IVISON RUSSELL said that whereas the extramural psychiatric services were at one time sadly neglected, and they quite rightly used every endeavour to increase out-patient clinics, psychiatric units, and early-treatment and neurosis centres, there was a possibility that the pendulum might swing too far and that these facilities might be regarded by regional boards as all-sufficient in a scheme of preventive psychiatry.

The task of fitting psychiatry into a regional hospital service would not be quite satisfactory until a pattern of key hospitals and their relationship with associated extramural centres were clearly defined. Was it possible to create in every management area a base hospital that would embrace all aspects and serve as the main centre of a group of treatment units for all types of psychiatric disorder ? Could the mental hospital be that base ? And, if so, would its present form require to be modified ? He believed that could be done if the workers in this field strove individually and collectively to that goal.

How should they plan the mental hospital of the future ? If they followed the pattern of general medicine they would have relatively small hospitals to provide curative treatment, and larger infirmaries for the care of long-stay cases. By a process of screening at out-patient clinics and diagnostic units patients would be selected for admission to the hospital appropriate to the nature of the case. But in such a scheme there must always be a last resort to deal with the failures, and some were a little concerned lest this final resting-place might be called the mental hospital.

The modern trend was to evaluate both the physician and the hospital in terms of production and according to the industrial potential of the patient. With that yard-stick psychiatry might sometimes seem to give short measure. It was all the more important that they should guard against an uneven distribution of experienced clinicians which might divert them from the long-stay in-patients.

Aged Patients

At present they had all got in mind the need for special hospital accommodation for aged patients. Some of these old people should not have to be sent to mental hospitals. A more simple type of hospital with good nursing would be adequate and ought to be made available.

While they could not accept the view that the senile patient did not suffer from any psychiatric malady, they would agree that the mental hospital might well hand over its habitual practice of providing large senile infirmaries. Their association would keenly co-operate in any effort to provide alternative care and comfort for the aged.

Group of Units

The mental hospital proper should not be an isolated institution but an extensive group of widely dispersed units, of which the nuclear centre or headquarters hospital would deal with the reception, treatment, and, if necessary, the prolonged treatment of all types of acute and difficult cases, regardless of duration. It would supply the medical and nursing staff for all the subsidiary units and out-patient clinics. Suitable cases would be treated by the same specialists in the psychiatric departments of the general hospitals and at neurosis centres, but these would not be used as screening centres for the main hospital.

Remote from the headquarters hospital, and situated in rural surroundings, relatively small resettlement homes would accommodate those who no longer required active treatment. Some of them would gradually become dispersed in the surrounding villages when the community learned the value of their labour and knew that the hospital would be ready to deal immediately with any difficulty that might arise. On this pattern, and with adequate geriatric units and mental deficiency colonies providing independently for their respective cases, the problem of overcrowding in mental hospitals would be solved, and here and there some ancient blocks could be demolished.

"Royal College of Psychiatry"

Proposing the toast of "The Royal Medico-Psychological Association" at the annual dinner held on the same day, the Sheriff of York, Councillor A. S. Rymer, hoped that the association would endeavour to awaken public interest in the progress that had been made in recent years in the treatment of mental illness and make it known that it was no different from physical illness. In reply, the president said the association looked back with satisfaction on its work of training nurses. The first certificate was awarded in 1890, and since that time more than 54,000 had been issued. In some years there had been as many as 4,000 entries for the examination. This activity would soon be terminated, and it would then be possible to concentrate on the postgraduate training of medical officers. He hoped that the new D.P.M. might some day have a Royal College of Psychiatry behind it, and perhaps, in a future not far distant, students would be taking systematic courses of study at a University of York.

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS

The Society of British Neurological Surgeons held its 40th meeting in London on July 22 and 23 under the presidency of Professor Lambert Rogers. The delegates included representatives of the United States, South Africa, Australia, and several European countries. Dr. Ernest Sachs, of St. Louis, was made an honorary member of the Society.

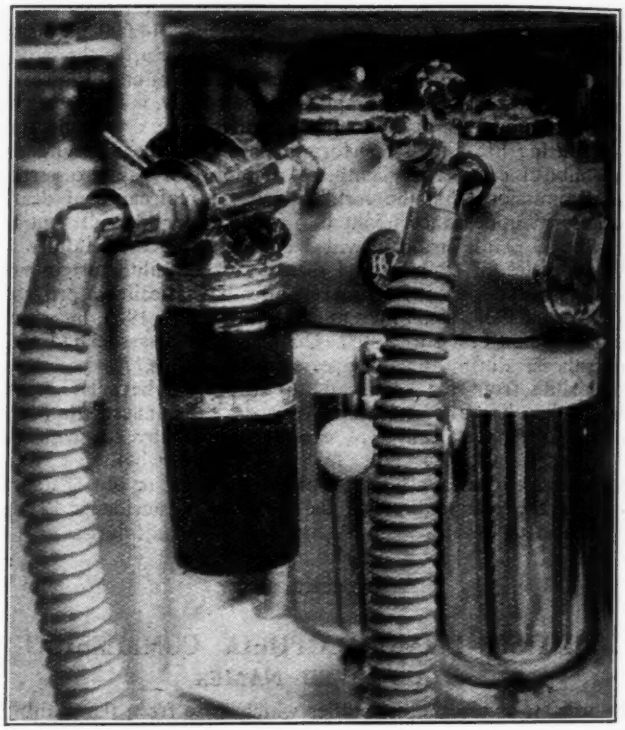
Discussions were held at the National Hospital, Queen Square, and at University College Hospital Medical School, and included a consideration of the neurophysiological studies of the Research Unit under Dr. Carmichael at the National Hospital. Dr. PAUL BUCY, of Chicago, spoke on the surgical treatment of involuntary movement. He said that Parkinson's disease was incurable by operation and the most that could be hoped for was the abolition or diminution of tremor. His own experience and that of almost all United States neurosurgeons had shown that involuntary movements could not be stopped without excising the motor area, which naturally produced profound weakness or paralysis of the affected limb. Dr. KRYNAUW, of Johannesburg, gave an interesting account of his experiences of removing the damaged hemisphere in hemiplegic epileptic children.

At the Society's dinner Dr. ERNEST SACHS gave his reminiscences of Sir Victor Horsley, under whom he had studied neurosurgery, and Dr. FRANCES GRANT, of Philadelphia, spoke about the organization and present trends of neurosurgery in the United States.

Preparations and Appliances

METHOD OF GIVING "V.A.M."

Dr. C. G. BLAKELEY, specialist anaesthetist, Royal Halifax Infirmary and Halifax General Hospital, writes: For nearly three years I have employed "V.A.M." (1 vol. divinyl ether and 3 vols. ethyl ether) in the Coxeter–Mushin apparatus by the convenient method illustrated in the accompanying photograph. The apparatus consists of an ether container from the



Walton Mk. 2, from which the large glass bottle has been removed and replaced by a Boyle apparatus chloroform bottle, thus allowing freedom of movement for the handle of the concertina bag when plugged into the respiratory side of the apparatus. The gas passages are of adequate bore, and clinical experience as well as experiment upon myself give no evidence of embarrassment to the respiration. The virtues of V.A.M. may find a wider application if this simple method is more generally known.

To stimulate public interest in nursing as a profession a mobile nursing exhibition is touring Northern Ireland from Aug. 15 to Sept. 10. The exhibition was opened in Belfast on Aug. 15 by the Parliamentary Secretary to the Ministry of Health and Local Government. It includes photographs illustrating all branches of nursing and midwifery, a small model operating theatre, a display of nursing decorations, nurses' badges, medals, etc., models of nurses' uniforms, and a panorama of nursing through the ages.

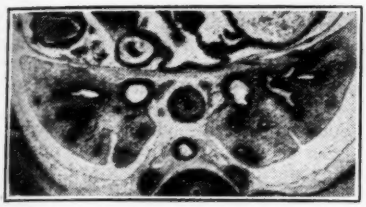
Correspondence

Broncho-pulmonary Segments

SIR,—Credit has been rightly given to Drs. J. Hardie-Neil and W. Gilmour, of Auckland, in your annotation (Aug. 6, p. 326) for their valuable contributions to lung anatomy. But it is a matter for some surprise that excellence in one aspect of their work should be marred by the simple *naïveté* of their approach when they embark on comparative anatomy.

In their article (Aug. 6, p. 309) they refer to the results of some dissections published by them in 1946. In themselves the data have some value, but they are wholly inadequate to sustain the conclusions they deem so "obvious" in respect of the homologies of the various bronchi. They examined lungs of only 11 species of mammals, and these belong to five different orders and three different subclasses or infraclasses. No argument is offered as to whether they may be considered generalized representatives of their orders, save their reference to the platypus as "one of the earliest mammals" with an "upper lobe closely resembling that of the human." One of the animals is merely identified as "a monkey," regardless of the fifty-odd modern genera and more numerous species of "monkey" with their very diverse grades of organization.

Now a proper utilization of the comparative anatomical approach demands some attempt to determine the course of phylogenetic modification in the various orders and smaller groups. When some account can be given of the probable course of evolution of lung structure within the orders of primates and artiodactyla respectively we shall be in a better position to judge whether the authors are correct in finding "obvious homologues of the apicals" (of man) in certain minor bronchi of the black buck, or in identifying as an "anterior" bronchus and as "apicals" (using the terms in the human sense) certain bronchi in the dog (in many respects a highly specialized member of the order carnivora). So far as the primates are concerned the authors could have widened the basis for their argument by integrating their findings with those of Narath,[1] who has provided beautiful figures of the bronchial tree and pulmonary vessels in a considerable number of animals. Their claim that "branches"—i.e., bronchi—may fuse is in effect a claim that recognizable primordia in the embryo do indeed coalesce. This is a phenomenon which yet remains to be demonstrated; and it appears to be improbable unless in very early phases of development, since cartilage blocks are laid down at the keels where bronchi join before the human embryo is 2 in. (5 cm.) long.



Human embryo, 20 mm. C.R., transverse section. This shows lateral and medial bronchi of (right) middle lobe, which is separated by the oblique fissure from the apical segment of the lower lobe; and the lingular bronchi of the left lung. Mesenchyme demarcates broncho-pulmonary segments. Reproduced by kind permission of Professor W. J. Hamilton.

A misleading statement regarding development requires comment. The authors state that "a broncho-pulmonary segment . . . is surrounded by connective tissue derived from the visceral pleura." Now "visceral pleura" is generally understood to refer to the covering of the lung which is derived from the coelomic mesothelium of the embryo together with a thin layer of adjacent loose connective tissue which is derived from the splanchnopleur. A lung bud consists in its earliest stage of three layers of tissue: (1) pulmonary epithelium; (2) splanchnopleuric mesenchyme; and (3) coelomic mesothelium. Of these the mesenchyme has long been recognized as the source of the "connective tissue" of the lung, and there is no evidence of its derivation from the visceral pleura.

The general course of subsequent changes is also well known. Substantial quantities of mesenchyme persist for a considerable time between the major bronchi and their derivatives; thus the broncho-pulmonary segments are demarcated from one another even more clearly than in the adult. At this time the mesothelium of the visceral pleura forms a well-defined layer, and it intervenes between segments only where fissures are developing. These fissures very early assume patterns similar to those found in adult lungs, and there is no evidence that secondary closure of fissures takes place on a large scale (though post-natal adhesion of the cardiac lobe is a possible exception).—I am, etc.,

Institute of Animal Physiology, Agricultural Research Council. ARTHUR B. APPLETON.

REFERENCE

1 *Der Bronchialbaum der Säugethiere und des Menschen*, 1901, Stuttgart.

Treatment of Rodent Ulcer

SIR,—As one who in common with many other dermatologists in Australia sees and treats in any one year more than double the number of basal-cell carcinomata quoted by Sir Cecil Wakeley and Mr. Peter Childs (April 30, p. 737) as having been seen in 35 years, I would like to make the following comments on their paper.

1. No conclusions of proved value can be made from the treatment of such a small number of cases (237).

2. The writers classify basal-cell carcinomata into three main types, whereas here in Sydney we recognize nine different clinical types. But possibly, from the small numbers quoted, they have not encountered some of these types.

3. The choice of therapy in general does not lie between irradiation and excision. With the exception of lesions on the back of the hand or dorsum of the foot the choice of treatment for the great majority of small lesions (where the treated area does not have a diameter greater than 5 cm.) is a combination of the cautery, curette, and *x* radiation (with a half-value layer of from 1 to 2 mm. of aluminium); this gives by far the best cosmetic results. This is obvious when it is considered that only the actual lesion is destroyed and removed with the cautery and curette and not the wider area necessary if the cautery alone or even surgery were used. Also, only 1,800 r of *x* rays are delivered to the base and 1 cm. wide of the visible or palpable margin instead of from 2,500 r upwards if *x* rays alone were used.

4. From the cosmetic point of view the results obtainable by surgery do not even begin to compare with those obtainable by irradiation in the treatment of lesions on the eyelids, nose, or ears. I have yet to see the plastic surgery which can, on the average, re-create a completely normal-looking ear, nose, or eyelid after surgical excision of a relatively large area. When a basal-cell carcinoma involves the cartilage of the ear or nose a very much more normal-looking organ with regard to shape and contour can be left after treatment with radiation.

5. The "attendant disadvantages" are considerably less with irradiation than with surgery in the treatment of large areas (as also with small areas), particularly in regard to cosmetic effect, economy (loss of time and money by the patient through being hospitalized), and pain and discomfort at the time of treatment.

6. I wonder if Sir Cecil Wakeley and Mr. Peter Childs would still say that "surgical excision is the method of choice for the deeper basal-cell carcinomata" if they saw, as we frequently do, patients with from one to two dozen or more lesions on the face alone.

7. The average patient, particularly if elderly, will almost invariably prefer removal of a lesion with irradiation in preference to surgery because of the natural aversion to "the knife" inherent in most people. For this and many other reasons the term "condemned to radiation" would be very appropriately replaced by "condemned to surgery."

8. I agree that the amenities for surgery, etc., are more generally available than adequate radiation facilities, but this fact is to be deplored rather than used as an argument for recommending surgery for all basal-cell carcinomata.

9. Irradiation is also "directed to the area involved and no more." Owing to the inverse square law and radiation quality employed very little radiation need go much deeper than a treated lesion, and not all or the main bulk of it as is inferred by Sir Cecil Wakeley.

10. I have seen a far greater proportion of recurrences after surgery than correctly applied irradiation, not only in Australia but in Great Britain and the U.S.A. Also I would be more than interested to know how "the extent of the excision" or area to be treated is more readily gauged with surgery than irradiation.

11. Sir Cecil Wakeley states that "the extent of a growth may not be appreciated without surgical excision." How can any man or his knife appreciate, see, or find every individual cancer cell and its distance from the clinically visible and palpable margin of any tumour? In point of fact an inadequate area is far less likely to be irradiated than excised, and the cosmetic result is generally far superior with irradiation.

12. The majority of small lesions can be treated with one dose of *x* rays in a matter of ten to fifteen minutes with no pain or even discomfort. Compare this with a local anaesthetic, the inherent distaste for the knife in almost every individual, and the presence of sutures which have to be removed later, and I think the issue of mental trauma needs no further comment. For larger and deeper lesions patients should be admitted to hospital if they receive surgical treatment, whereas they can be treated as out-patients by fractionated *x* radiation. Here again I would ask which method would occasion the most mental trauma.

—I am, etc.,

Sydney. JOHN C. BELISARIO.

Portal Hypertension

SIR,—In an annotation (July 30, p. 273) you quote Dr. R. R. Linton's operative mortality for spleno-rectal anastomosis in patients with hepatic cirrhosis as 71% (*Surg. Gynec. Obstet.*, 1948, **87**, 129). He kindly sent us his figures up to the end of 1948, which I quoted at the recent B.M.A. meeting at Harrogate. As they have improved very considerably since the publication you quote, I give them hereunder in tabular form.

Condition	No. of Cases	Deaths	Mortality
Cirrhosis	21	7	33⅓%
Portal obstruction (extra-hepatic) ..	14	0	0%
Total	35	7	20%

During 1948 Linton operated on 20 patients with two deaths. I can testify that both these had very advanced hepatic failure.

May I raise one more point? The deficient coagulation of the blood is usually attributed to the introduction of sodium citrate. I do not know the evidence for this. We do know that many of these patients are deficient in prothrombin, and also that stored blood is deficient in this factor. As the prothrombin cannot be corrected in the presence of advanced hepatic disease, it would seem wise to use freshly drawn blood still potent in prothrombin when large transfusions may be needed. I believe therefore that the absence of the prothrombin is at least as important as the presence of citrate in the blood.—I am, etc.,

London, E.1. J. E. RICHARDSON.

Stress Incontinence in the Female

SIR,—Since the appearance of the article by Mr. Wilfred Shaw on the treatment of stress incontinence (June 18, p. 1070) I have watched your columns carefully for adverse comment. That none has appeared may be because I am alone in believing that this condition can be cured by less formidable procedures than that described. With all the respect due to an accepted authority I suggest that Mr. Wilfred Shaw's operation is unnecessarily formidable both for patient and surgeon, although I am prepared to accept the opinion of those who have tried it that it is less so than it sounds. An operation is not to be rejected because it is difficult, but it should not be adopted unless it has been shown that simpler, safer procedures fail. Mr. Shaw produces no evidence that this has been done, nor in fact could he or anyone else do so, as there are several operations too recent in origin for any opinion yet to be given as to their efficacy.

No one who has followed up cases treated only by vaginal plastic operations doubts that some are never cured and many recur, but excellent results have been obtained by the Aldridge type of operation and also by the simpler retropubic fascial grafting procedures described by Millin and by Marshall. For the comparatively short time in which I have been practising it I have had no failures and no recurrences with the 20-minute bladder-neck fixation operation of Everard Williams. I shall regard this as the operation of choice if these results continue. In the meantime I use a suburethral fascial graft, except in those cases where dense adhesion of the urethra to the vaginal wall makes attempted separation dangerous, when the graft is jettisoned and the Everard Williams operation carried out.

Mr. Wilfred Shaw's note on the selection of cases is brief. If prolapse has been successfully treated by colporrhaphy but incontinence remains, an operation of the type under discussion is indicated. If the result as regards the prolapse is not good a further attempt by anterior colporrhaphy often cures the incontinence also. One of the newer operations is indicated as a primary procedure in cases of stress incontinence without generalized prolapse, always assuming, of course, that neurological cause has been excluded.—I am, etc.,

Manchester. WALTER CALVERT.

Stress Incontinence in Disseminated Sclerosis

SIR,—In April, 1949, I was asked to see a patient aged 54 with disseminated sclerosis. In addition, probably as part of the disease, there was urinary stress incontinence which was getting worse. This was brought on by any effort, especially by coughing and sneezing. However, the patient stated she rarely passed a night without a wet bed, the bladder emptying itself during sleep. Her husband was very keen to have something done for her; he pointed out that as long as he lived she would be all right, but she was now becoming older and if he died before her it might be difficult to find someone willing and able to look after a patient with her great disabilities.

She had been under treatment for her disseminated sclerosis at intervals for the past 33 years. In 1938 or 1939 she was examined by a surgeon and told nothing could be done, and was fitted with a special apparatus to hold the urine. This proved useless, however. Earlier in 1949 a ring pessary was fitted, and she had also been given six weeks' electrical physiotherapy to the lower abdomen in the hope this would stimulate control, but neither treatment produced any improvement.

On examination, she was found to have a slight cystocele which was accentuated by coughing. Her pelvis appeared otherwise normal. On May 2 an Aldridge-type sling operation was performed without difficulty. The self-retaining catheter was kept in until the eleventh day after operation. After its removal there was rather more difficulty with micturition than usual after this operation. Frequent passage of a catheter caused a certain amount of infection, which responded to treatment. Filling of her bladder caused acute discomfort, no doubt partly due to the many years during which her incontinence prevented any bladder distension. At the end of one month, however, she had complete control. A severe cold and cough six weeks after operation caused a recurrence of frequency and bladder discomfort, but her incontinence remained controlled and, as she said, proved to her and her husband that she really was cured.

This case is reported so early after the operation because of the apparently very satisfactory result obtained by the treatment of this one disability in a patient with this distressing nerve disease.—I am, etc.,

Bristol. M. F. POTTER.

Spermatolysis

SIR,—Dr. Cafer Yildiran (April 2, p. 575) reports the occurrence of lysis of spermatozoa in the semen of five out of 75 men he examined. Spermatolysis resulting in disappearance of all spermatozoa from the ejaculate was described as occurring after two hours in two cases, after five hours in one, and after six hours in the remaining two cases. The fluid obtained by prostatic massage in two of these cases caused lysis of spermatozoa in normal control specimens. It is suggested that spermatolysis may be a cause of male sterility.

A series of 314 successive seminal specimens submitted to the Family Planning Association laboratory for routine analysis were examined for this feature. Twenty-two of these were "repeat" tests—i.e., the ejaculate of 292 men was examined. As Dr. Yildiran suggests that the factor causing spermatolysis might also be the cause of other seminal abnormalities, special attention was directed to a group of specimens showing oligozoospermia and other gross defects.

The quality of specimens in this series was as follows: group 1, total azoospermia, 24 cases; group 2, oligozoospermia

(under five million/ml.), 37 cases; group 3, subfertile and border-line, 187 cases; group 4, normally fertile, 44 cases. The age of specimens was as follows: group 1, six specimens produced at laboratory and inspected immediately, six specimens less than 1 hour old, and 12 specimens 1–2 hours old; group 2, 13 specimens produced at laboratory, and 24 specimens 1–2 hours old; groups 3 and 4, 61 specimens produced at laboratory, and 170 specimens 1–2 hours old. These specimens were kept under observation from the time received for periods of 6–24 hours. Specimens showing total azoospermia were mixed with part of others containing spermatozoa and kept under similar observation.

No spermatolysis was observed in any of the above 292 cases. In view of this finding, and in view of the fact that we cannot recall seeing a case suggesting spermatolysis in more than 5,000 previous semen analyses, we conclude that if spermatolysis occurs in this country it must be very uncommon. However, spermatolysis might be a phenomenon confined to other racial or climatic conditions, and it would be of great interest to hear whether Dr. Yildiran's findings have been confirmed elsewhere.—I am, etc.,

London, S.W.1. H. A. DAVIDSON.

B.C.G.

SIR,—Dr. W. Norman Taylor (April 30, p. 778) asks, "What are the facts?" And then, after discussing the significance of a positive reaction to the Mantoux test, concludes that by analogy with other diseases we can suspect that it may indicate resistance but that we can be by no means certain as yet.

Is not the case for B.C.G. much stronger than Dr. Taylor's letter implies? Heimbeck[1] was the first to show that healthy tuberculin-positive young adults were less susceptible to tuberculous disease than were those initially tuberculin-negative. Both Heimbeck[2] and Ferguson[3] have significantly lowered the incidence of clinical tuberculosis in tuberculin-negative nurses as compared with unvaccinated controls. In Ferguson's series there was actually less disease among the vaccinated than among those initially Mantoux-positive (those who "have been tried in the fire and not found wanting," according to Dr. Taylor).

Owing partly to the difficulties of conducting a perfectly controlled experiment over a period of many years in civilized communities, both these studies have been open to criticism, but on different grounds. However, Aronson's[4] study amongst 3,000 young Mantoux-negative American Indians appears conclusive to most critics. Nearly all those vaccinated became Mantoux-positive within a few weeks, and only six of them had died from tuberculosis after nearly 10 years, as against 53 of the unvaccinated controls.

It has been asked, "Could the same spectacular results be expected in civilized countries?" Studies like those of Heimbeck and Ferguson and the clinical experience of eminent Scandinavian physicians like Wallgren[5] indicate the answer. The Danes, who practise B.C.G. vaccination more extensively and thoroughly than any other people, have the lowest tuberculosis mortality in Europe (about 30, as compared with more than 50 per 100,000 in Great Britain).—I am, etc.,

Melbourne, Australia. E. A. NORTH.

REFERENCES

1 *Tubercle*, 1936, **18**, 97.
2 Ibid., 1948, **29**, 84.
3 *Amer. Rev. Tuberc.*, 1946, **54**, 325.
4 Ibid., 1948, **57**, 96.
5 *British Medical Journal*, 1948, **1**, 1126.

Treatment by H 11

SIR,—I wish to protest strongly against the grossly unfair references to H 11 made by Dr. P. H. Phipps (July 9, p. 100). Reprints of articles published in the medical press have been sent to selected members of the medical profession, and in most cases the doctors concerned already have had experience of H 11 therapy.

A case is quoted in which she states that H 11 was tried out in hospital and failed. The truth is that H 11 was first given to this case on Sept. 2, 1943, and 13 days later, on Sept. 15, was stopped. The patient died 5 days afterwards on Sept. 20. Obviously this was no trial or failure of H 11. Indeed, on Sept. 24 the assistant medical officer wrote, "As his period of survival was so short one can hardly express any opinion as to the effect of the H 11 injections."

Further, the allegation is made that these Laboratories refused personal investigations and treatment of the patient. The facts are that the necessary supplies of H 11, with instructions, were dispatched to the hospital on the same day that a telephoned request was received for a supply. The Hosa Laboratories requested further details about the patient, and the correspondence, which can be seen, demonstrates the personal and detailed interest of these Laboratories throughout the brief period under review, as well as the helpful and courteous collaboration of the medical staff of the hospital.

Lastly, although many cases of inoperable cancer have recovered under H 11 treatment, no claim or even suggestion has ever been made by these Laboratories that H 11 is as yet the cure for cancer. The only claim made is that in advanced inoperable cases with an expectation of life of over two months an inhibitory action is demonstrable in 66% of cases treated—which claim can be verified by any careful and full investigation of our records.—I am, etc.,

Hosa Research Laboratories, Sunbury-on-Thames. J. H. THOMPSON.

SIR,—I received to-day, with the compliments of the Director of Research, Hosa Research Laboratories, a reprint of an article from the *Medical World* by Dr. Gordon Ward entitled "The Truth about H 11." Among other things discussed in this article is a list of 12 cases "selected by the Hosa Laboratories . . . as the most favourable in their files."

There are apparently between 3,000 and 4,000 histories of cases treated with H 11 in the files of the Hosa Laboratories. Survivals in the 12 cases cited have been for 7, 6, 4½, 4, 3, 3, 3 years, 18, 16, 16, 13, and 13 months respectively. If all these cases are accepted as cured (and this is not claimed) the cure rate would be between 0.3 and 0.4% of cases treated, while the 5-year survival rate would be 0.05 or 0.06%. Before one can judge the value of such survivals it is essential to know whether similar survival rates exist among untreated "inoperable" cancer cases.

It is a curious feature of almost every new method of treatment for cancer that has been advocated that a few cases have given apparently successful results while the great majority show no benefit. It would be interesting to know of any cases of cancer, classified as inoperable, of unexpectedly long survival which have had no further treatment or only symptomatic treatment. In the absence of knowledge on this point it is clearly impossible to form a fair judgment as to the possible value of treatment with H 11.—I am, etc.,

Glasgow. P. R. PEACOCK.

Parotid Emphysema During Labour

SIR,—A brief report of a somewhat unusual case of parotid emphysema might be of interest.

The patient, a primipara aged 20 years, was in bed in a maternity home suffering from a mild toxaemia of pregnancy. At 11.30 p.m. on June 25 she went into labour. She did not ring for the midwife until 5 a.m. on June 26, when she was found to be fully dilated. She therefore had no sedation or analgesia. By 7 a.m. she had made no further progress and she was delivered easily by forceps following episiotomy. She had gross bilateral swelling of the parotid glands when I saw her at 7 a.m. This was subsiding in 24 hours and was clear by June 28. Associated with this swelling was marked bilateral conjunctival haemorrhages. The patient was afebrile, had had mumps previously, and there had been no possible contact during the previous four weeks. This girl must have undergone very considerable physical effort, and in the course of this air must have been forced up Stensen's ducts.

As a footnote, I met a case of self-induced parotid emphysema during the late war. A soldier, on draft for overseas, attempted to evade the issue by blowing strenuously into a gingerbeer bottle, inducing parotid swelling, and then reporting sick, complaining with considerable craft of pain in his testicles. Such an effort almost deserved to succeed.—I am, etc.,

Bournemouth. ALAN S. OGDEN.

Urea for Migraine

SIR,—Dr. Nevil Leyton (Aug. 6, p. 335) pleads for a serious attempt to treat sufferers from "migrainous" headaches, and mentions urea as a remedy to be tried in obstinate cases. May I go further and suggest the use of this drug as a first line of preventive treatment in every case, whether of recent origin or of long standing? It is surprising how many patients will derive considerable benefit, if not complete relief, from attacks.

The dosage advised is as follows: 20 gr. (1.3 g.) of urea in water three times a day for a week, followed by the same dose twice a day for two weeks and further treatment with a daily dose of 20 gr. for an indefinite period.—I am, etc.,

Birmingham. J. A. BROWN.

POINTS FROM LETTERS

Retained Placenta

Dr. W. D. G. TELLAM (Penzance) writes: You have published many letters on the treatment of retained placenta, but it appears to me that such an emergency need never arise—unless it is that very rare placenta accreta. In a semi-rural domiciliary practice I have found the intravenous injection of 0.25 ml. of ergometrine given as soon as the head is born and the anterior shoulder delivered, followed 30 seconds later by the delivery of the posterior shoulder, results in the delivery of the placenta immediately afterwards—leaving a firmly contracted uterus. Our breech deliveries have received a similar intravenous dose as soon as the head is born, followed 30–45 seconds later by an intact placenta and membranes. I would like to know if this treatment of the third stage has failed or has caused any complications.

New Problems of Rheumatism

Dr. THOMAS ROBERTSON (Glasgow) writes: In your leading article (July 23, p. 221) you quote Hench as stating that there are 200 arthritic and musculo-skeletal conditions called rheumatism. This raises a number of important questions. By what criteria are these differentiations made? In such a context as the above, does the word rheumatism signify anything? Apparently one can develop any of the 200 types either as a disease in the body ("soma") or in the "psyche." Dr. W. S. C. Copeman (p. 191), who now comes forward with another aetiological variety of rheumatism, provides a quasi-mechanical explanation concerned with water metabolism and fatty tissue. He suspects, probably rightly, that the hypothalamus may be at fault. But what relation exists between the hypothalamus and this mysterious "psyche"? However—to come to earth—as a physician of the baser sort I am delighted to find (1) that fibrositis no longer exists, (2) that most cases of rheumatism met with in practice cannot be either understood or adequately treated unless the patient is not only physically but psychologically examined, as Halliday pointed out in the *Journal* (1937, **1**, 213 and 264), and (3) that physiotherapy frequently does more harm than good.

Psychogenic Rheumatism

Dr. I. ERNST REICHENFELD (Birmingham) writes: Drs. William Tegner, Desmond O'Neill, and Anna Kaldegg (July 23, p. 201) gave an interesting analysis of a number of those unfortunate people with vague but for them very real complaints who are familiar to the G.P. Valuable as their paper is, I found the title "Psychogenic Rheumatism" rather misleading. In my opinion the expression "rheumatism" ought to be reserved for the two conditions which are more or less well defined entities—viz., rheumatic fever and rheumatoid arthritis. If we call every painful condition for which we cannot find a cause rheumatic we follow the rather vague nomenclature of the lay public and confuse the latter even more. That a cervical rib is being called a "rheumatic complaint" obviously is an oversight.

Percussion Finger

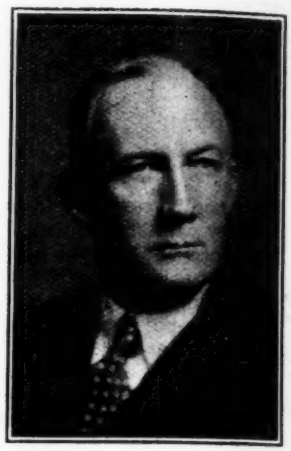
Dr. A. NIVEN ROBERTSON (Edinburgh) writes: For thirty years of my life I was engaged continuously in the examination of chests, and therefore I was daily percussing the dorsum of the middle phalanx of the middle finger of my left hand. As a result of this constantly recurring trauma I noted a distinct smooth, low, and firm swelling had been created on the dorsum of that phalanx. The swelling was scarcely noticeable to the eye, but it was quite obvious to palpation. It had a convex surface and shaded off on to the bone at its upper and lower curved ends. It was never painful. For the last seven years I have rarely done any percussion and the swelling has to all appearances disappeared. I shall be interested to know if other percussionists have found the same thing. The swelling was obviously a fibrous hypertrophy due to constant mechanical trauma.

Obituary

SIR ALAN NEWTON, M.S., F.R.C.S., F.R.A.C.S., F.A.C.S.

On Aug. 3 Australia lost one of her most distinguished sons—a great surgeon—Sir Alan Newton.

Hibbert Alan Stephen Newton was born on April 30, 1887, and was educated at Haileybury College, Melbourne, and at the University of Melbourne. He was a brilliant student, and in his final year was placed first in a distinguished company. He was very early attracted to surgery, which was to give scope not only for his natural and acquired manual dexterity, aided by a splendid visual knowledge of anatomy, but for his sound judgment and the decisive quality which characterized all his thinking.



He qualified in 1909, and after a year as resident at the Royal Melbourne Hospital and a further period as surgical registrar he became associated with Mr. Fred Bird, who had operated on him early in his course and from whom he learnt much of the art of surgery. He took the M.S. in his own university in 1912. In 1913 he was appointed an out-patient surgeon at the Royal Melbourne Hospital. The period immediately before this appointment was spent not in acquiring further qualifications but in postgraduate study and research in England, where he came under the influence of Sir Victor Horsley and saw much of his friend, the late Dr. Gordon Clunes Mathieson, who was then working with Professor Starling at University College Hospital.

Apart from this brief absence and a longer one during the 1914–18 war, all his working life was spent in close association with the Royal Melbourne Hospital until he retired from the active staff and became an honorary consultant surgeon. During the first world war he served in France as a surgeon in the Australian Army Medical Corps. In 1919 he became a Fellow of the Royal College of Surgeons, England. Subsequently, he was elected a Fellow of the American College of Surgeons, an Honorary Fellow of the British Association of Surgery, and an Honorary Fellow of the Royal Society of Medicine.

Newton's ancestry, with many distinguished lawyers in his family tree, might have led him to the practice of law, but indeed his talents were such that he would have made a success of any profession. He was a splendid teacher—a master of lucid exposition. Always a ready speaker, for any special occasion he would carefully prepare his speech and in doing so memorize it. This gift of oratory was displayed on many occasions, notably in his Stawell Oration and in an address to his colleagues and friends at the Royal Melbourne Hospital dinner on "The Spirit of the Place."

Newton was keenly interested in the teaching of students, and after his return from the first world war, in addition to his regular hospital clinics, he became a lecturer in surgery at the University of Melbourne, and at a later stage took the chief position as Stewart Lecturer organizing the surgical teaching. He had a strong belief in

the importance of carefully planned clinical lectures in which people of experience could provide for the students material not readily to be obtained in textbooks. He was deeply interested not only in undergraduate but also in postgraduate teaching, and played an important part in forming the Melbourne Permanent Postgraduate Committee, whose object was to increase the facilities for postgraduate teaching in all departments of medicine and surgery. He was a Foundation member of the Royal Australasian College of Surgeons, and in its early years was Censor-in-chief and subsequently its President. His unselfish and unsparing efforts to improve the status of the surgical profession in Australia were extremely fruitful. For his work for the College he was knighted in 1936.

During the second world war Sir Alan served with the rank of colonel in the Australian Army Medical Corps, being consulting surgeon to Army Headquarters for two years. From 1940 to 1945 he was chairman of the Medical Equipment Control Committee, Department of Defence, and in this capacity he made a major contribution to the Australian war effort. He brought to bear on the problem of medical equipment and drug supplies a clear analytical mind that saw the position in its true perspective and assessed priorities in their right order. In January, 1942, the paramount importance of immediately getting more quinine out of Java was realized by the Australian military authorities, who had just arrived there. Within 24 hours of Sir Alan Newton's receiving this secret information a very large sum was made available by the Australian Government in a Dutch bank in Batavia to procure 120 tons of quinine: such was his capacity for rapid decision and prompt action and the influence he exerted at the highest level even as early as 1942. His co-operation with Army Headquarters in speeding up the manufacture of essential drugs like sulphaguanidine was of the utmost value to both the South-west Pacific and the South-east Asia Commands. Nor were his activities limited to the field of surgery. His status stood almost as high in the financial as in the surgical world. His reputation for probity, sound judgment, and business acumen, and his wide knowledge of men and affairs, made him much sought after, and he was later on the board of directors of several of the leading companies of Australia.

Be surgical technique never so great, reputation outlives the man by very little. The only immortality for physicians and surgeons lies in the extent to which they lay foundations for their students and their successors. Alan Newton followed what was best of tradition but had no patience with its "dead hand." He saw that hospitals and medical schools could be too self-contained, that it should be possible to share what was best in one with others, and that this might be reciprocal. After the second world war, despite chronic ill-health, he attempted to apply these principles to the three teaching hospitals of the Melbourne Medical School, and this remained his chief interest until the end of his life.

Alan Newton was a dynamic person. His character was solid as a rock. He never sat on a fence, and for him there were no grey shadows. His clear insight and objective approach to problems made his opinion much valued. In him imagination and vision were blended with the capacity to adapt them to practical ends. Though intolerant of stupidity or muddle-headed thinking, he had the virtue of being intensely critical of his own conclusions and was always prepared, on the rare occasions on which events showed him to be wrong, to admit his mistakes. He would never undertake anything unless he could do it well, and everything he did was superlatively well done.

He married in 1919 Mary Cicely, daughter of J. Hartley Wicksteed, of Weetwood, Headingley, Yorks, who, together with a son and a daughter, survives him.—T.P.D., N.H.F., and C.H.K.

Dr. Isaac Jones and Mr. E. T. C. Milligan write: Many to-day in this country and Australia will have a sad sense of loss with the passing of Sir Alan Newton, but there will come a greater sense of gratitude and satisfaction for the gift of such a man in our life and generation. He was a wise and warm friend, an inspiring leader, and a stirring example. He inherited, and acquired through his home training, high moral standards, the art of creative human relationships, and a strong sense of selfless duty and responsibility. He began as a leader in his academic career, and with his outstanding abilities he naturally took the lead even amongst a unique generation of leaders and talented men. He ever maintained this leadership in the wider sphere of professional and social life. This pioneering leadership gave him an air of austerity and dignity, but it was a thin veneer over an open and affectionate heart, which it was the delight of all his friends to discover. How he raised Australian surgery by his vision, example, and planning to the high place it now holds in British surgery will for ever place him among the leaders and prophets of that young country; but those of us who were trained with him and lived alongside him will ever be grateful for the man, his standards, and his inspiration and encouragement.

His main vocation in life was to help his fellow men in the inevitable hour of suffering and personal crisis. In recent years he too had to face the common ordeal of suffering and death, the ultimate test of a man's philosophy of life. In recent letters there was the unmistakable fighting note of triumph and hope, revealing that the inspiration of his whole life came from his knowledge and possession of the same spiritual resources and verities which inspired his notable ancestors.

An Australian colleague writes: By the death of Sir Alan Newton, Australia has lost one of her leading surgeons and a man who did all in his power to follow and teach in his own land what he felt to be best in British surgery. After qualifying and holding several house appointments at the Royal Melbourne Hospital he visited England and worked with Sir Victor Horsley at University College and Queen Square on shock injuries to the spinal cord, at the same time studying the advances of British surgery. When the first world war drew to a close he was one of the selected men brought to this country to do postgraduate work in addition to their Army responsibilities: he obtained his F.R.C.S. in 1919. The two periods of work in England had a great effect on Newton's future life and work, for he carried home with him an admiration for what he had seen and learnt and a determination to reproduce in his own country and hospital those things which he felt were true, honest, just, and of good report. Thus in later years he became a prime mover in establishing, and was a Foundation Fellow of, the Royal Australasian College of Surgeons, filling the positions of Censor-in-chief, Vice-president, and finally President in 1942–5. Between the wars Newton steadily built up a wide reputation as a careful and skilled surgeon and was perhaps best known for his work on goitre. As a teacher, in classroom or in ward, he was clear, accurate, and concise, and had no difficulty in holding his audience. In addition to many contributions to scientific journals he was much sought after as the speaker on special occasions. The Lister Oration on toxic goitre in 1938, and his tribute to his old teacher Sir Richard Stawell in October, 1947, will remain in the memory of

those who heard them. He said of Stawell that he was at times "perhaps a little unrestrained in his criticism . . . but nobody minded this much." The same could be said with equal truth of Newton. Honest endeavour pleased him, but he could not suffer slackness in silence. The beginning of the second world war found Australia in a dangerous position as regards medical and surgical supplies, dependent as it was on overseas shipments. Newton was appointed chairman of the Medical Equipment Control Committee and did a fine piece of work. Under his enthusiastic guidance a workshop built to make railway equipment produced surgical forceps, scissors, and the like. He was trusted by the members of his profession, and they put up cheerfully with the restrictions he imposed, for all recognized his honesty of purpose and fairness. Tall, trim, and alert, he commanded respect, but his patients and those he honoured with his friendship experienced kindness beyond the ordinary, courtesy, consideration, and good humour on all occasions. He will be sorely missed, and he leaves many cherished memories behind him in addition to admiration for his services to his country and his profession, for he was a big man in every way.

W. G. WILLOUGHBY, M.D., D.P.H.

Dr. W. G. Willoughby, Past President of the British Medical Association and formerly medical officer of health for Eastbourne, died on Aug. 13 at the age of 83.

Until William George Willoughby was introduced at the Annual Business Meeting of the British Medical Association in London in 1930 his name was little known to the medical profession outside Eastbourne. He was content with a local reputation, but that was a very high one. By the practitioners of Eastbourne, whose unanimous choice he was for the presidency of the Association, no man was more highly regarded. His election as President was something new in Association history, for he was the first whole-time medical officer of health to be its titular head. But he himself, as he said in his address at the Eastbourne Meeting in 1931, was anxious that not too much should be made of that singularity, for he thought it emphasized a cleavage which should have no real existence. Probably he would have described himself as a general practitioner as much as any of them, and equally he would have called his colleagues in general practice practitioners of preventive medicine. For him medicine was not bisected into the curative and the preventive, and it was his vision of its wholeness—a vision he had translated into administrative detail during nearly half a century—which accounted for much of his popularity among the medical profession in his area.

W. G. Willoughby was a son of Devon, but he had been for so long associated with Sussex as to be a part of its personality. He received his medical training at St. Bartholomew's (where his younger brother, the late Dr. W. M. Willoughby, M.O.H. for the City of London, followed him) and qualified in 1888. After a resident appointment at his hospital and some period of study in Vienna he became, within five years of his qualification, medical officer of health for Eastbourne, in which post he remained for forty-five years. On his retirement in 1939 he was the senior medical officer of health for any county or county borough as regards length of service. He had seen Eastbourne grow from a small place of not more than five thousand inhabited houses to a spreading resort with more than three times that number.

At the time he began his work few public health services were in existence or were in more than rudimentary form. Indeed, Eastbourne came in for a good deal of criticism just when Willoughby was getting into the saddle. This *Journal* had an acid note in 1896 that Eastbourne had rather too good a conceit of herself in respect of her sanitary conditions. It was said to be more by good luck than by intelligent management that she had escaped a visitation of smallpox that would have brought her growth to a premature end. It was also suggested that an improvement in the quality of her water supply and the purification of her sewers "might profitably engage the attention of those who have the public health of the place in their keeping." Under W. G. Willoughby's guidance Eastbourne became from the sanitary point of view one of the most progressive places in the kingdom.

The long years of service for Eastbourne were broken only by the war of 1914–18, in which, after serving in Egypt, he became malaria officer in Macedonia and eventually Acting A.D.M.S., Sanitary, to the 12th Army Corps. After the war he gradually took a more prominent place in the central affairs of his profession. He became President of the Society of Medical Officers of Health and of the Medical Officers of Schools Association, as well as of the Eastbourne Medical Society. He was called to the presidency of the British Medical Association at its ninety-ninth meeting, and in the preparations for the Centenary he took a prominent part. Some of the ceremonial of the Centenary celebrations fell to him, notably the unveiling of the tablet on the Sir Charles Hastings house during the Worcester Pilgrimage. After his presidency he continued for eight years to be a member of the Council, interesting himself in many Association concerns, but especially those which bore on public health. He was a member of the Public Health Committee for many years and chairman of the special committee which dealt with the relation of alcohol to road accidents. At the Annual Meeting at Winnipeg in 1930 he was vice-president of the Preventive Medicine Section, and at Oxford in 1936 of the Section of Medical Sociology. He had also served as chairman of his Division in 1928–9 and president of his Branch in 1929–30. He was twice an M.D., having taken the London degree in 1889 and the M.D. in State Medicine in 1894. While his main interest was in public health and in balneology it extended also to other fields—to psychology, for example, on which he contributed several articles to Tuke's *Dictionary of Psychological Medicine*.

Like other public servants whose principal work is to prevent, his achievements are not among those that leap to the eye, but they were appreciated in the place where he laboured, and by none more than his medical colleagues. They subscribed to a handsome testimonial on his retirement, on which occasion he was also presented with the freedom of the borough. In his valedictory, addressed to the mayor and corporation of Eastbourne, he said: "Without the good will of the medical profession it is not possible for the public health services of the country to be carried out satisfactorily. I am very grateful, therefore, that in Eastbourne there has been full co-operation between medical practitioners and the public health department."

Those who had the happiness to be associated with him will long remember a most kindly and modest personality.

JOHN PHILLIP HENRY DAVIES, of Elgin, Llanishen, near Cardiff, died suddenly on July 19, while on holiday. A member of one of the oldest and best-known medical families in South Wales, he was born in Ystrad Rhondda in 1883, the son of Dr. I. Naunton Davies, who practised there for many years and who was an outstanding public figure. Dr. Davies received his medical education at Cambridge University and St. Bartholomew's Hospital, qualifying in 1910. A year later he took the D.P.H., and in 1914 the Cambridge degree of M.B. After a term as house-physician to the London Chest Hospital he was appointed assistant medical officer of health for the Rhondda Urban District Council. In the first world war he served in the R.A.M.C. in the Second Welsh Field Ambulance with the rank of captain. After demobilization he went into general practice in Llanishen, succeeding the late Dr. Shiach there, and very soon he gained the confidence and high regard not only of his many patients but also of all his professional colleagues. Among the appointments that he held were those of medical officer to the Post Office and clinical assistant to Cardiff Royal Infirmary, while he was honorary surgeon to St. John's Ambulance Brigade and an Officer of St. John of Jerusalem. He was secretary of the Section of Pharmacology and Therapeutics at the Annual Meeting of the Association at Cardiff in 1928. In all of these offices he gave of his best. A conscientious and able practitioner, he was of a singularly simple, direct, and attractive disposition, while his temperament was remarkably equable, so that he was never ruffled or out of temper. His ethical sense was of the highest, and in this and in other aspects of his character there was much of that strict sense of duty that we associate with the "old school." No one ever had a hard word to say about "J.P.H.," as he was affectionately known. His genial personality will long be missed. He leaves a widow, one son who recently graduated in medicine from Bart's, and two daughters. The deep sympathy of a wide circle of friends and admirers is extended to them in their great bereavement.

Dr. ALFORD WILLIAM ANDERSON died at his home at Dalbeattie, Kirkcudbrightshire, on July 25 at the age of 81 after an illness of several months' duration. He graduated M.B., C.M. at Edinburgh University in 1891, and after serving as resident medical officer at Fife and Kinross Mental Hospital he took up general practice at Dalbeattie in 1894. In 1908 he proceeded M.D. For almost forty years he carried on an extensive country practice single-handed, and retired in 1935, when he was honoured by a public banquet. The welfare of his patients was always his first consideration, and his kindly manner, added to his very considerable experience and skill, was a constant comfort in this widely scattered community. From his earliest days in Dalbeattie the local volunteers claimed his attention, and he received a commission shortly after going there; he was instrumental in raising the company to full strength. In August, 1914, he was mobilized with his battalion, the 1/5 K.O.S.B., but was later transferred to the R.A.M.C., attaining the rank of lieutenant-colonel. On return to civilian duty he became an enthusiastic member of the British Legion, and was the first president of the local branch, an office he held with distinction for many years until illness supervened. It was largely due to his efforts that the Dalbeattie branch of the Legion received the gift of the allotment grounds and entrance gate. During the recent war he was Medical Examiner of Recruits and Troop Relation Officer in the area. His recreations were shooting and fishing, in which he was an expert, and his congenial company and good sportsmanship were ever an asset. He was a pioneer in motoring and one of the first in Dalbeattie to own a car. Predeceased by his wife, he leaves a family of two sons and three daughters. The profession has lost a fine representative of the old type of general practitioner, who will be much missed by all who knew him.

Professor CAMILLO WIETHE, director of the Second University Clinic for Otorhinolaryngology in Vienna, died on July 10 at the age of 60. From 1927 to 1936 he had been assistant to Professor Hajek, the well-known laryngologist, and was in private practice from 1938 to 1945, when he was appointed director of the clinic. He had contributed to the medical press on many subjects, including burns of the oesophagus, the surgery of the larynx, and allergic conditions.

Universities and Colleges

UNIVERSITY OF LONDON

The following candidates have been approved at the examinations indicated:

M.D.—*Branch I (Medicine):* G. M. Bailey, D. H. Bennett, A. C. Boyle, H. W. Bunje, N. R. Butler, J. A. Chamberlin, C. E. Dent, H. E. de Wardener, I. R. Gray, K. G. Green, T. A. Grimson, K. J. Gurling, M. Hamilton, J. N. Harris-Jones, M. F. Hart, M. S. R. Hutt, Madeline K. Keech, D. R. Laurence, G. de J. Lee, G. H. T. Lloyd, J. Marks, D. B. Morgan, F. W. Nash, F. T. Page, Diana G. Paradise, R. G. Pitman, N. Ponnampalam, T. A. J. Prankerd (*University Medal*), D. L. Rees, T. A. Richards, M. Steel, S. J. Steel, P. G. Swann, D. M. E. Thomas, N. A. Thorne, L. H. Turner, E. Waddington, R. S. Walker, J. R. Wilson, W. J.-S. Wilson. *Branch II (Pathology):* Rosemary P. Biggs (*University Medal*), F. N. Ghadially, C. L. Greenbury, R. F. Jennison, Sylvia D. Lawler (*Mark of Distinction*), W. D. Linsell, C. F. Ross, C. H. Smith, H. E. Vickers, K. W. W. H. Walton, F. Whitwell. *Branch III (Psychological Medicine):* J. H. Rey, A. Shapiro, Fede M. Shattock (*University Medal*). *Branch IV (Midwifery and Diseases of Women):* J. D. Martin, N. F. Morris, A. C. Pearson. *Branch V (Hygiene):* Doris A. Craigmile, M. T. I. Jones. *Branch VI (Tropical Medicine):* D. Lawrence.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL

The following scholarships have been awarded: *Anatomy and Physiology Scholarship,* J. S. H. Lodge (Emmanuel College, Cambridge); *Burney Yeo Bequest Scholarship,* H. T. Thomas (Jesus College, Cambridge); *Epsom College Scholarship,* Michael Dulake (Clare College, Cambridge); *Seaman Bequest Scholarship,* T. M. O. Morris (Trinity College, Cambridge).

UNIVERSITY OF MANCHESTER

William Sayle-Creer, M.Ch.Orth., F.R.C.S., has been appointed Honorary Clinical Lecturer in Orthopaedic Surgery.

The Council of the University has accepted the sum of over £200 from the subscribers to the fund raised in memory of the late Dr. William Susman, Lecturer in Morbid Anatomy and Histology from 1926–48. It is proposed to establish an annual prize in pathology, the first offer of which will be made in 1950.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The Council of the Welsh National School of Medicine has appointed William Ferguson Anderson, M.D., M.R.C.P., F.R.F.P.S., to the post of Senior Assistant in the Medical Unit of the Welsh National School of Medicine. Dr. Anderson is at present Lecturer in Materia Medica and Therapeutics in the University of Glasgow and Assistant Physician at Stobhill Hospital, Glasgow.

The Services

The President of the Czechoslovak Republic has conferred the Czechoslovak Military Medal, 1st Class, upon Air Marshal Sir Harold E. Whittingham, K.C.B., K.B.E., R.A.F., retired, in recognition of valuable services rendered in connexion with the war.

A notice appeared in the *London Gazette* dated Nov. 19, 1948, and in the *Journal* of Dec. 11, 1948 (p. 1043), stating that the King of the Hellenes had conferred the decoration of Commander of the Royal Order of the Phoenix upon Captain A. M. Boyd, R.A.M.C. The name should have read Lieutenant-Colonel (temporary) Alexander Michael Boyd, R.A.M.C.

The Efficiency Decoration has been conferred upon Major (Acting Lieutenant-Colonel) C. K. Sconce and Major J. M. Lees, R.A.M.C., T.A.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 30. [No. 30

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949 (a)	(b)	(c)	(d)	(e)	1948 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	27	4	13	2	3	40	2	17	4	—
Deaths		—	—				—	—		
Diphtheria	98	8	21	4	5	125	15	28	18	5
Deaths	—	—	—	—	—	2	—	—	—	—
Dysentery	94	10	40	2	—	77	24	35	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	1	—	2	—	2	—	—
Deaths		1								
Erysipelas			14	6	—			33	6	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				102					18	
Deaths	25	1	3	5	1	40	2	2	3	1
Measles*	4,266	303	63	145	85	8,211	457	59	87	59
Deaths†			—	1	—			—	—	1
Ophthalmia neonatorum	47	4	2	—	2	54	4	10	1	—
Deaths										
Paratyphoid fever	50	—	10 (B)	3 (B)	—	35	1	2 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	263	14	—	5	—	355	23	2	3	1
Deaths (from influenza)‡	2	—	—	—	—	4	1	1	—	—
Pneumonia, primary			94	20				93	29	
Deaths	103	18		5	11	195	31		10	6
Polio-encephalitis, acute	22	4				1	—			
Deaths										
Poliomyelitis, acute	147	16	15	—	—	38	6	4	—	1
Deaths§	11	3				2	—			
Puerperal fever		—	10				1	5		2
Deaths										
Puerperal pyrexia‖	99	9	9	1	2	122	9	8	1	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,045	91	112	59	31	1,329	83	208	64	18
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	3	1	—	4	1	9	—	1	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,795	84	33	110	77	3,309	275	8	78	10
Deaths	6	1	—	1	—	8	—	—	1	1
Deaths (0–1 year)	248	32	30	21	8	297	23	29	13	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,205	680	493	162	93	4,830	781	587	175	107
Annual death rate (per 1,000 persons living)			9·9	10·0				11·8	10·9	
Live births	7,876	1232	850	325	207	8,011	1230	913	409	228
Annual rate per 1,000 persons living			17·0	20·1				18·4	25·6	
Stillbirths	176	24	29			211	22	39		
Rate per 1,000 total births (including stillborn)			33					41		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis and Polio-encephalitis

The notifications of these diseases were 70 more than in the preceding week. The largest returns during the week were: Yorkshire West Riding 24 (Leeds C.B. 5, Dewsbury C.B. 4, Colne Valley U.D. 2, Spenborough U.D. 2); London 20 (Camberwell 4, Kensington 3, Hampstead 2, Paddington 2, Southwark 2, Wandsworth 2); Middlesex 13 (Hornsey M.B. 6, Enfield U.D. 2); Lancashire 12 (Liverpool C.B. 6); Cornwall 8 (Camborne–Redruth 3, Penzance M.B. 2, West Penwith R.D. 2); Essex 8 (West Ham C.B. 2); Southampton 7 (Portsmouth C.B. 2); Warwickshire 6 (Birmingham C.B. 2, Coventry C.B. 2); Cheshire 6 (Winsford U.D. 3); Suffolk 5 (Bury St. Edmunds M.B. 2); Leicestershire 5 (Leicester C.B. 2).

In the week ended Aug. 6, 1949, notifications of poliomyelitis numbered 164 (147) and of polio-encephalitis 22 (22). (Figures for the preceding week are shown in parentheses.) Counties with multiple cases (poliomyelitis and polio-encephalitis together) were: London 31 (20), Bedford 5 (2), Berkshire 3 (2), Chester 3 (6), Cornwall 9 (8), Derby 2 (0), Devon 6 (1), Essex 7 (8), Gloucester 5 (3), Hertford 3 (3), Kent 3 (3), Lancaster 12 (12), Leicester 5 (5), Lincolnshire, Lindsey 4 (4), Middlesex 15 (13), Somerset 2 (0), Southampton 9 (7), Stafford 2 (1), Suffolk West 6 (4), Surrey 7 (1), Sussex West 2 (4), Warwick 5 (6), Yorks East Riding 2 (2), Yorks North Riding 2 (1), Yorks West Riding 17 (24), Glamorgan 5 (3), Monmouth 2 (2).

Some outbreaks with high attack rates in comparatively small communities are still being reported, but there is also a generalized rise in prevalence like that of 1947. Fortunately the notifications in the week under review are 301 fewer than those of the corresponding week of 1947. The figures are:

	Poliomyelitis	Polio-encephalitis
1947 week ended Aug. 2	448	39
1949 „ „ Aug. 6	164	22

Discussion of Table

In *England and Wales* a decrease occurred in the number of notifications of measles 786, whooping-cough 209, scarlet fever 112, acute pneumonia 66, while a rise was reported for acute poliomyelitis 51, acute polio-encephalitis 19, and diphtheria 22.

The largest decreases in the notifications of measles were Warwickshire 115, Lancashire 94, London 76, Cheshire 72, Kent 72, while the only exception to the general decreasing trend was a rise of 51 in Norfolk. A small fall in the incidence of scarlet fever occurred in every region of the country except in the eastern region, where there was a slight rise. No changes of any size were reported in the local trends of whooping-cough. The chief features of the returns of diphtheria were increases in Staffordshire, where the cases rose from 0 to 11 and involved eight administrative districts; Warwickshire, with a rise from 4 to 10 (Birmingham C.B. 9); Yorkshire West Riding, with a rise from 1 to 8, where the cases were spread through six administrative areas.

An outbreak of dysentery involving 18 persons was notified in Buckinghamshire, Amersham R.D. A further 14 cases of dysentery were notified from Warwickshire, Warwick R.D., bringing the total cases during the past three weeks to 81. The other large returns of dysentery were Lancashire 11 and London 10. Of the 50 cases of paratyphoid 30 were notified in Lancashire (Liverpool C.B. 21).

In *Scotland* decreases were recorded in the number of notifications of measles 29, acute primary pneumonia 20, dysentery 14, while an increase of 23 was reported for scarlet fever. Fifteen cases of poliomyelitis were notified, an increase of 8 on the number of the preceding week. The rise in the incidence of scarlet fever was mainly due to the northern and north-eastern areas.

In *Eire* rises occurred in the number of notifications of diarrhoea and enteritis 49 and whooping-cough 56, and a fall of 15 was recorded for scarlet fever. An increase of 56 occurred in the notifications of diarrhoea and enteritis in Dublin C.B.

In *Northern Ireland* an increase of 21 in the number of notifications of measles was the only change in the trends of

infectious diseases. The rise was contributed by the counties of Londonderry and Tyrone.

Week Ending August 6

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 854, whooping-cough 1,566, diphtheria 89, measles 3,683, acute pneumonia 220, cerebrospinal fever 19, acute poliomyelitis 164, acute polioencephalitis 22, dysentery 45, paratyphoid fever 37, typhoid fever 5.

Medical News

Awards by N.A.P.T.

The N.A.P.T. has awarded the following scholarships to Colonial medical personnel to enable them to spend a period in Britain studying anti-tuberculosis methods. Scholarships of £120 each to: Dr. R. K. Richardson (Trinidad), Dr. A. W. E. Moreira (Federation of Malaya), Dr. Abbas bin Haji Alias (Federation of Malaya), Dr. Mohd Din bin Ahmad (Federation of Malaya). Scholarships of £80 each to: Miss W. C. Jones, matron (Jamaica), Mr. See Ho Meng, male nurse and hospital assistant (Singapore). A prize of 100 guineas for an essay on the control of tuberculosis in a British Colony by a medical officer in the service of a Colonial Government has been awarded to Dr. Vincent Hetreed, of Northern Nigeria.

Scientific Films

The Third International Scientific Film Congress will be held in Brussels on Sept. 30–Oct. 5. In conjunction with the congress there will be a Scientific Film Festival at which medical films will be shown. The Scientific Film Association of Great Britain is considering the films to be submitted as the British entry in the festival. While the association knows of most of the important films, it would appreciate information about privately produced films suitable for inclusion. Full details should be sent to the office of the association at 4, Great Russell Street, London, W.C.1.

Pharmaceutical Conference

The Pharmaceutical Society of Great Britain will be represented at the Assembly of the International Pharmaceutical Federation in Amsterdam on Aug. 29–Sept. 2 by the president, Mr. H. Clement Shaw, Professor Brindle, Professor Todd, Dr. J. M. Rowson (who will read a paper at the Assembly), Mr. E. A. Brocklehurst, Miss M. A. Burr, Mr. J. F. McNeal, and Mr. F. W. Adams (secretary and registrar).

Tuberculosis Appointments in Italy

A number of appointments at the Ospedale Sanatoriale "Forlanini" in Rome and at the Ospedale Sanatoriale "Forlanini" in Naples are open to British medical practitioners who wish to learn Italian methods of treating tuberculosis. The appointments are tenable from Nov. 1, 1949, to June 30, 1950. Those holding them will receive full board and lodging at the hospital, but must pay their return fares and supply their own pocket money. Candidates should send their applications before Sept. 15 to the Controller, Education Division, British Council, 3, Hanover Street, London, W.1, giving particulars of their age, medical training and experience, and the names and addresses of two referees.

Progress Report on Cancer Research

A series of 15 articles on cancer research have been prepared by Mr. Lester Grant, a science writer on the staff of the *New York Herald Tribune*. They are designed to be an authoritative progress report on work in this field, and the United Nations Educational, Scientific, and Cultural Organization, 19, Avenue Kléber, Paris, 16e, has purchased them and is willing to make the whole series available freely to any journal or individual on request.

Manchester Paediatric Club

At the fifth meeting of the Manchester Paediatric Club on July 18 Professor Alton Goldbloom, professor of paediatrics at McGill University, Montreal, Canada, delivered an address on "Pitfalls in Paediatric Diagnosis." The second annual general meeting of the club will be held on Sept. 27.

National Institute for the Deaf

At the annual general meeting of the National Institute for the Deaf, held on July 6, the president, the Duke of Montrose, referred to the greatly increased work of the N.I.D., much of it due to the introduction of the Health Service. Thousands sought advice on all kinds of problems relating to new legislation. He emphasized the improvements necessary in the supply of hearing-aids under the Government scheme, and said that new and improved hearing-aids would soon be available. The chairman of the council, Mr. R. Scott Stevenson, said that the institute had become an active information bureau, with an average mail of some 400 letters a week. The institute was in constant touch with Government departments and organizations of many kinds. Mr. Edward Evans, M.P., vice-chairman of the N.I.D. and chairman of the National Advisory Council for the Welfare of Handicapped Persons, set up by the Minister of Health, pointed out that the Minister had stated categorically that welfare work could not succeed without the help of the voluntary societies. The State had therefore accepted the ultimate responsibility for the care of the handicapped, but left the human administration to those who by long experience and devoted service, coupled with technical efficiency, were best suited to administer that great conception of social service.

Funds for Peckham Health Centre

Lord Nuffield has offered £5,000 to Peckham Health Centre if other subscribers give the same amount. The health centre states that subscriptions have now nearly reached the required figure, but further contributions are urgently needed. One way in which funds can be raised is through the health centre's *Bulletin*, since the costs of publication and postage have been defrayed by a friend. The *Bulletin* costs 7s. 6d. a year, and is obtainable from 8F, Hyde Park Mansions, Marylebone Road, London, N.W.1.

Health Education

At the 22nd annual general meeting of the Central Council for Health Education, held on July 28, Lord Woolton was re-elected president and Sir Allen Daley and Dr. Charles Hill vice-presidents. Dr. E. K. Macdonald, medical officer of health for the City of Leicester, was reappointed chairman of the council, and Dr. W. A. Bullough, formerly county medical officer of health for Essex, and Dr. Robert Forgan were also re-elected as vice-chairman and honorary treasurer respectively. In his report for the year Dr. Macdonald said that in spite of the reduction in the grant from the Ministry of Health the council had been able to maintain its equilibrium and to introduce several promising and significant developments. During the year the Central Council had organized three series of short refresher courses at 12 university centres in England, Wales, and Northern Ireland. They had proved so successful that the council proposed to make them a permanent feature of its free services and to extend their scope considerably. The council had also considered what it might do to relieve the very heavy burden on general practitioners working under the Health Service. It was planning a series of small leaflets on specific disorders, which general practitioners would be able to hand to patients at consultation. These leaflets would contain information about diet, etc., which would supplement the physician's verbal instructions, and which the patient could keep for reference. The scheme would be operated in conjunction with local authorities. He also referred to possible changes in the constitution of the council, which would probably give a predominant influence to local authorities. It would perhaps mean the severance of some old ties, but it would give the council a more official standing and greater financial stability and thus enable it to continue to exercise a growing influence on the development of health education.

Commendation for Bravery

Dr. Eric Buchanan Ross, general medical practitioner, Cambois, Northumberland, has received the King's Commendation for brave conduct for services when an accident occurred in a mine.

Wills

Dr. Ronald Edgar French, of Burgh Heath, Surrey, left £135,119. Dr. William George Harnett, of Hadley, Barnet, left £43,785, including £100 to the Royal Medical Benevolent Fund. Dr. Kenneth Rogers, of Bournemouth, left £12,758. Dr. James Nowell Richardson, of Halton, Leeds, left £12,064. Dr. Frank Spiller Locke, of Tunbridge Wells, Kent, formerly Reader in Physiology, King's College, London, left £232,538, with the request that, after certain bequests had been made, part of the residue go to the Royal Society, to be utilized for endowing "Locke" fellowships for research in experimental physiology and pharmacology. Sir James Purves Morisson Purves-Stewart, of London, W.8, left £57,478, including £2,500 each to the University of Edinburgh and Westminster Hospital Medical School, the income to be used in assisting senior medical students and young graduates who would benefit by temporary financial assistance.

COMING EVENTS

Annual Meeting of the British Association

The 111th annual meeting of the British Association for the Advancement of Science will be held at Newcastle-upon-Tyne from Aug. 31 to Sept. 7. Sir John Russell, F.R.S., will speak on "World Population and World Food Supplies" in his presidential address. Among the subjects to be discussed by the physiology section, of which Professor R. A. Peters is the president, are adolescent nutrition, relations of brain to mind (joint meeting with the Section of Psychology), and folic acid and anaemia.

French Congress of Electroencephalography

The Second International Congress of Electroencephalography will be held in Paris on Sept. 1–3. Information may be obtained from Dr. H. Gastaut, 149, Promenade de la Corniche, Marseilles.

French Congress of Neurology

The 4th Congress of Neurology will be held in Paris on Sept. 5–10. Information may be obtained from Dr. Raymond Garcin, 19, Rue de Bourgogne, Paris, 7e.

Photographic Exhibition

The 94th annual exhibition of the Royal Photographic Society will be held at 16, Princes Gate, London, S.W.7, from Sept. 9 to Oct. 26. The scientific, including medical, section is from Oct. 8 to Oct. 26. Particulars may be obtained from the secretary of the society at the address given above.

Physiotherapy

The Annual Congress of the Chartered Society of Physiotherapy will be held at the Assembly Hall, St. Pancras Town Hall, Euston Road, London, N.W.1, on Sept. 14–18. Particulars may be obtained from the society at Tavistock House North, Tavistock Square, London, W.C.1.

Infertility

The Family Planning Association will hold an annual conference on infertility at Edinburgh on Sept. 17–18. Particulars may be obtained from the association at 69, Eccleston Square, London, S.W.1.

Exhibition for Rheumatic Patients

The British Rheumatism Association will hold an exhibition for rheumatic patients at the Town Hall, Chelsea, on Sept. 27–30. Concurrently there will be a two-day conference on (1) the welfare of the rheumatic patient, and (2) the interests of the handicapped rheumatic. Tickets for the conference cost 10s. Information may be obtained from the Association at 5, Tite Street, Chelsea, London, S.W.3 (telephone: FLAxman 2957).

Middlesex Hospital Medical School

The annual dinner of the Middlesex Hospital Medical School will be held at the Savoy Hotel on Friday, Sept. 30, at 7 for 7.30 p.m.

SOCIETIES AND LECTURES

Tuesday

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At Anatomy Lecture Theatre, Edinburgh University, Aug. 23, 4.30 p.m., "*The Conducting System of the Heart*," by Professor Thomas Walmsley.

Friday

NATIONAL HOSPITAL: INSTITUTE OF NEUROLOGY, Queen Square, London, W.C.—Aug. 26, 5 p.m., "*Topectomy: Cortical Ablation for Treatment of Mental Illness*," by Professor J. Lawrence Pool.

APPOINTMENTS

The following have been appointed to the Civil Consulting Staff of King Edward VII Convalescent Home for Officers at Osborne, East Cowes, Isle of Wight, as from June 4: Sir Francis Fraser, M.D., F.R.C.P., Sir James Paterson Ross, K.C.V.O., M.S., F.R.C.S., W. D. W. Brooks, D.M., F.R.C.P., D. E. Bedford, M.D., F.R.C.P., D. H. Brinton, D.M., F.R.C.P., H. Osmond Clarke, C.B.E., F.R.C.S., A. E. Porritt, C.B.E, M.Ch., F.R.C.S., R. Marnham, M.Ch., F.R.C.S.

BUNTING, F. W., M.B.E., M.D., D.P.H., Medical Officer of Health for Prescot Urban District Council.

CASSON, F. R. C., M.B., B.S., D.P.M., Clinical Assistant to Department of Psychological Medicine, Charing Cross Hospital, London, W.C.

FENTON-RUSSELL, D., M.D., D.P.H., D.P.M., Consultant Psychiatrist, Stanley Royd Hospital, Wakefield, Yorkshire.

HOLLAND, C. B., M.B., Ch.B., D.A., Consultant Anaesthetist in the Ipswich Area, East Anglian Regional Hospital Board.

JONES, JOHN FRASER, M.B., B.S., House-surgeon, the Royal Hospital, Wolverhampton.

KEEPING, JOYCE AUDREY, M.D., M.R.C.P., Physician to Paddington Chest Clinic, London, W.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Crabtree.—On August 5, 1949, at the Queen Elizabeth Hospital, Birmingham, to Joyce May "Maimé" (née Airey), wife of Norman L. Crabtree, F.R.C.S., of 14, Church Road, Edgbaston, a brother for Valerie and Jennifer—John Rawcliffe.

Herford.—On August 6, 1949, at Cliveden Memorial Hospital, Bucks, to Mary (née Crago), wife of Dr. M. E. M. Herford, D.S.O., a daughter.

Lambert.—On August 5, 1949, at Hillingdon Hospital, to Sadie, wife of Dr. E. Vivian Lambert, of Uxbridge, a son.

Leslie.—On July 11, 1949, at the Duke of York Nursing Home, Bradford, to Frances, wife of Dr. William Leslie, a daughter.

Murley.—On August 12, 1949, at 43, Newlands Avenue, Radlett, Herts, to Daphne (née Garrod), wife of R. S. Murley, M.S., F.R.C.S., a son—David Peter.

Ounsted.—On August 5, 1949, to Margaret Ounsted, B.M., wife of Christopher Ounsted, B.M., a son.

MARRIAGE

Eason—Towler.—On August 6, 1949, at St. Paul's Presbyterian Church, Croydon, Thomas John Eason, F.R.C.S., to Ruth Willand Towler, M.B., Ch.B.

DEATHS

Ashby.—On August 6, 1949, at 127, Roundhay Road, Leeds, J. E. Ashby, M.R.C.S., L.R.C.P., aged 59.

Battiscombe.—On August 4, 1949, at 29, Drakes Avenue, Exmouth, Eric George Battiscombe, M.R.C.S., L.R.C.P., aged 76.

Campbell.—On July 7, 1949, at 20, Daneswell Drive, Leasowe, Cheshire, Thomas Graham Campbell, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., aged 79.

Charles.—On August 2, 1949, at Bournemouth, Rhys Pendrill Charles, T.D., M.D., of 9, Dean Park Road, Bournemouth.

Crisp.—On August 12, 1949, at 2, Hillside Road, Cheam, Surrey, Thomas Crisp, M.D., late of St. George's House, Chorley, Lancs, and Tinterfield, N.S.W.

Foster.—On August 5, 1949, at Danby, Yorks, John Robert Foster, M.B., C.M., F.R.C.S.Ed., formerly of West Hartlepool, aged 81.

Hopkinson.—On July 31, 1949, at 6, Adams Road, Cambridge, Albert Hopkinson, M.B., B.Ch., aged 85.

Kaufmann.—On August 2, 1949, Walter Kaufmann, M.D., of 18, Danes Court, Wembley Park, Middlesex.

Macneill.—On August 6, 1949, at 64, Hook Road, Surbiton, Surrey, Robert Archibald Macneill, M.B., Ch.B., aged 74.

McNabb.—On July 28, 1949, Harry Horsman McNabb, M.D., of 8a, St. John Street, Manchester, and Butley Close, Prestbury, Cheshire, aged 74.

May.—On August 3, 1949, at Torquay, Harry John May, L.S.A., of Chudleigh, Devon, aged 84.

Mitchell.—On July 29, 1949, at the Royal Hospital, Wolverhampton, Nevil Robert Kennedy Mitchell, F.R.C.S.Ed.

Newton.—On August 3, 1949, in Melbourne, Australia, Sir Alan Newton, M.S., F.R.C.S., aged 62.

Palmer.—On July 28, 1949, at Accra, Gold Coast, Ralph Winnall Palmer, M.R.C.S., L.R.C.P., aged 35.

Parkhurst.—On July 27, 1949, at Rathan, Lewes Road, Newhaven, Sussex, Rodie Parkhurst M.B., C.M.Ed., aged 80.

Wilson.—On July 30, 1949, at 76, Farquhar Road, Edgbaston, Birmingham, Theodore Stacey Wilson, M.D., F.R.C.P., aged 88.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Infection from Ducks' Eggs

Q.—*What is the toxin sometimes present in ducks' eggs? Is there less danger of infection if the duck is kept in a pen and given fresh water daily, with no access to dirty water? What precautions should be taken in cooking ducks' eggs?*

A.—The retention of the term "food-poisoning" to describe a variety of conditions, some due to toxins, some to infection by living bacteria, evidently explains the misconception in this question. The noxious agent present in a small proportion of ducks' eggs is not a toxin but a living organism, usually *Salmonella typhi-murium* ("*B. aertrycke*"), sometimes *Salm. enteritidis* ("Gaertner's bacillus"). These organisms cause an infection in the bird itself and are actually within the egg when it is laid. They are closely related to the enteric group but produce a very different type of disease, with a short incubation period (one to two days) and an acute onset. The condition takes the form of an acute catarrh of the entire alimentary tract, with fever and diarrhoea, and its duration is commonly only three days. Birds free from the infection will not acquire it if kept under clean conditions, and particularly away from ponds and other dirty water. Possible sources of infection, apart from other birds, are pigs and rodents. No form of cooking which fails to coagulate the whole of the egg protein is likely to destroy the organism—that is to say that eggs lightly boiled or poached will be infective; they should be safe when boiled hard or when used in cake-making.

Bleeding Nipples

Q.—*What is the cause of exudation of blood from both nipples of a nursing mother? In the case I have in mind—in a primipara aged 32—bleeding started immediately after parturition, and for a week blood mixed with colostrum could be expressed from the nipples.*

A.—This phenomenon is well known but is comparatively rare. It is associated with the enormously increased blood supply and congestion of the breasts which develop very quickly after childbirth, and is presumably the result of some inherent fragility of the capillaries around the alveoli. It has nothing to do with the character of the labour. Sometimes the blood is not fully mixed with the colostrum or milk—suggesting that the trouble is limited to certain ducts and alveoli. In other cases it is intimately mixed, giving the appearance of "brown" milk. The occurrence may be only transitory, subsiding gradually after the first few days, but sometimes it persists long enough to justify discontinuing breast feeding. Although the writer has no experience of it, it would seem worth while trying the effect of 5 mg. stilboestrol twice daily for 24 to 48 hours, during which time suckling or expression of the milk should be continued to avoid suppression of lactation.

Persistent Sinus after Fractured Coccyx

Q.—*A woman of 28 had a fall 10 years ago resulting in fracture of the coccyx. A loose piece of bone was removed, but the wound healed slowly and a shallow sinus formed. Several sequestra have since been removed, but the sinus persists with a slight clear discharge. The chest is clear. For the past few years the sinus has periodically shown a tendency to close, and this is accompanied by photophobia, headache, and irritability. These symptoms do not appear to be neurotic. What treatment do you advise?*

A.—From the history it appears that there was infection of the fracture haematoma, leading to osteitis of the coccyx. Persistence of the sinus suggests either that infection is still active in the remaining bone or that there is a further sequestrum. In general, the treatment of such cases would depend on the clinical course and the radiographic appearances. If evidence of residual bone infection were found on *x*-ray examination, excision of the coccyx would be indicated. If the radiographs were inconclusive, a decision would have to be made on clinical grounds alone; but, unless the clinical course suggested that continued progress was being made towards final spontaneous closure, excision of the coccyx—preferably under penicillin and sulphonamide control—would usually be advisable. Local and general symptoms after temporary closing of a sinus—particularly when accompanied by pyrexia—often indicate local pocketing of pus. In the absence of pocketing it is difficult to understand how such symptoms as are described in this case could arise.

Sleepwalking in Childhood

Q.—*A boy of 7 walks in his sleep. Is he likely to come to any harm if he should wake to find himself out of bed? Should one talk to him, or should one attempt to lead him back to bed—or merely follow and allow him to return in his own time? He will be moving shortly to a house at the seaside. Would he be likely to walk out of the house to the beach, which is only a short distance away? What do you advise?*

A.—It is generally agreed that, although sleepwalkers seldom come to harm, this does sometimes happen. In childhood somnambulism is not uncommon, the child often acting out a dream in which he is looking for his mother to comfort him. The stimulus may be anything emotionally upsetting, such as worry over school or home relationships; if this can be detected and resolved, sleepwalking usually ceases unless there is a general disturbance of personality involving great anxiety. It is better to let a child find his way back to bed, if possible, giving him a tucking-up that even in a dazed state he may find reassuring. It is advisable to avoid over-excitement and alarming reading at bedtime, which should be made a specially pleasant time so that he goes off to sleep feeling happy and safe. Phenobarbitone can also be a useful preventive. It is just possible that the boy, if he knows of the forthcoming move to the sea, may be disturbed by fantasies about the change of house, and will settle down when this has actually taken place.

Fat Legs

Q.—*An otherwise attractive spinster of 25 is socially handicapped by "over-sturdy legs." The distribution of fat is normal above the waist but massive below; periods are scanty, and there is some hypothyroidism. Can you explain the localization of fat to this site, and suggest a remedy?*

A.—Fat distribution below the waist, with absence of fat above the waist, is characteristic of the disorder known as lipodystrophy, and the cause is unknown. However, in idiopathic adiposity it is by no means uncommon for this distribution to be present in milder degree, or for the fat to be located in the abdomen and hips, and perhaps the upper arms, leaving the face thin. In Cushing's syndrome the face and neck, in contrast, are fat. No one has yet been able to explain the cause of the many varieties of fat distribution met with. The treatment is that of adiposity in general, and unfortunately the fat depots are sometimes more resistant than the areas where fat is normal. As regards "over-sturdy" legs, this has a constitutional genetic basis, and is probably not of endocrine origin. It is certainly not amenable to endocrine therapy.

Thrombo-angiitis Obliterans

Q.—*How should one treat thrombo-angiitis obliterans in a man of 50 years who has been suffering from intermittent claudication in both legs for two years? Is vitamin E of any value?*

A.—It is not easy to prescribe suitable treatment when so few details are given. The fundamental indications are to improve the collateral circulation and to minimize the risks of gangrene by scrupulous attention to the toilet of the feet. The various methods of improving the circulation include the use of

vasodilator drugs, saline and ether–saline injections, intermittent venous occlusion, and lumbar sympathectomy. Specific indications for these various measures can be found in the standard textbooks. Vitamin E and similar substances, especially α-tocopherol, have recently been employed in the treatment of peripheral vascular disease; early reports were enthusiastic, but these have not been endorsed by subsequent experience.

Enlarged Liver after Amoebic Dysentery

Q.—*A European living in an area where amoebiasis is endemic, and who has had amoebic dysentery in the past, suffers from a painful enlarged liver with moderate pyrexia. No protozoa have been found in the stools, and malaria was excluded. The total leucocyte count did not rise above 7,400 per c.mm., and no jaundice was present. By the time anti-amoebic treatment was started (after eight days) the temperature had settled. Pain and liver enlargement persisted through a full course of emetine injections, though diminishing in severity. The patient is now free from signs and symptoms. Is amoebiasis the probable diagnosis? According to the text-books, leucocytosis and a rapid response to emetine are characteristic of amoebic hepatitis. Is liver biopsy simple and safe? Could you refer me to a description of the technique?*

A.—The problem of hepatic enlargement after amoebic dysentery is a difficult one. There is a group of patients in whom the textbook criteria of amoebic hepatitis exist and who rapidly recover after injections of emetine. There is another group with which medical officers serving in the Middle East and Italy during the war became familiar. In these patients there is complaint of pain in the right hypochondrium and the liver is moderately enlarged and tender; there is no improvement with injection of emetine, and biopsy usually shows the liver tissue to be normal. Symptoms disappear over a period of weeks or months without specific treatment. The nature of this syndrome, and, indeed, whether it is related to amoebiasis, are uncertain. Liver biopsy is simple and safe, but inadvisable if active amoebic hepatitis is suspected. A description of the technique appeared in this *Journal* recently (1949, **1**, 657).

Aspirin and Haematemesis

Q.—*Is there a real risk of haematemesis following the continued administration of aspirin? Can you give references to the literature on this subject?*

A.—The danger of haematemesis following the taking of aspirin is not related so much to the continued use of the drug as to individual susceptibility. In certain persons aspirin produces inflammatory reaction when it comes in contact with the mucosa of the lesser curvature of the stomach. Aspirin in solution has been shown by Douthwaite and Lintott (*Lancet*, 1938, **2**, 1222) to be non-irritant. The difficulty experienced hitherto has been that calcium aspirin has tended to break down with the liberation of salicylic acid. A preparation is now sold which overcomes this disadvantage.

Angioneurotic Oedema

Q.—*What are the prognosis and treatment of angioneurotic oedema in a man aged 68? He is allergic to strawberries and other foods, and at the age of 36 he had severe pruritus which cleared up under x-ray treatment. He now seems to be in constant fear of "choking." Is there anything better than adrenaline, which appears to have been effective in previous attacks? Would desensitization be worth while?*

A.—Since adrenaline was effective in previous attacks, this patient might be supplied with a syringe and adrenaline; he could then give himself an injection as soon as an attack started. "Neo-epinine" ("aleudrine") could be used instead of adrenaline, and one of the antihistaminic drugs, such as "phenergan" ("3277 R.P."), "anthisan" (pyranisamine maleate), or "benadryl," could also be given. The most careful history should be taken for possible food or drug allergens, and a food diary might help. Unusual foods, and foods taken in excess at times corresponding to the attacks, as well as the occasional headache powder, hypnotic, or purgative, should be especially inquired for. Skin testing is rarely if ever of value in this condition. Trial eliminative measures must include not only the suspected food as usually eaten, but all foods which contain any trace of the suspected allergen. Specific and non-specific desensitization are of doubtful value. A thorough search should be made for a focus of infection. The prognosis depends very largely on finding the cause, which is often difficult and frequently unsuccessful.

NOTES AND COMMENTS

Muscae Volitantes.—RANA IN FAUCIBUS and RENIS FLUITANS (Mr. Frederick Ridley, amanuensis) write: We write on behalf of our sisters the Muscae Volitantes, who are much distressed by the article so headed in "Any Questions?" (July 23, p. 241). Ever since God in His wisdom caused light to pass through a living jelly so that beauty might illumine the soul of man these charming and entertaining translucent threads, whorls, and dots have cast their shadows upon the retinal image. Normally mankind has ignored them; often, under favourable conditions of lighting, he has been delighted by their antics. They have excited the poet's fancy and helped to while away many an idle hour. Loved by most, they have always been an annoyance to microscopists and, we admit with some regret, they have from the earliest times provided a focus of anxiety for humans of sick mind. Our sisters have consoled themselves with the thought that many people have chosen less pleasant natural phenomena on which to focus their mental illness. To us, of course, it is no new thing for humans to seek to "cure" natural phenomena and to "invent" disease (first they imagine a pathology and from that, with much word-spinning, is deduced a logical treatment—preferably an operation), but for our sisters this is a new experience. Maybe magic is as young, as we know it to be as old, as man. So uvulae have been amputated, the frenulum linguae cut, kidneys "fixed," nipple strings "broken," and now muscae volitantes are to be treated both medically and, God help us, surgically. It may be argued that disease processes can give rise to optical phenomena simulating our sisters' appearance, but we doubt it. In such cases gross, ugly, opaque monsters may be seen, but surely these could hardly be confused with our delicate sisters. Moreover, the normal person recognizes at once that such appearances are new—muscae he has had with him always. We beg you to publish our letter: first, because it is both inaccurate and unwise to use the same name for the effects of disease processes as is used by Everyman to describe a perfectly normal experience; secondly because, as we have said, many humans of sick mind are already worried by our sisters, and these people should be comforted, not alarmed and confused; and, lastly, because we are quite sure that the right attitude towards our sisters, apart from affection or indifference, is that of *Punch*, who calls them "flying mice," and of the late Harrison Butler, who wisely said, "Muscae Volitantes are things we can all see but only the damn fools look at 'em."

Family Planning.—The Family Planning Association state that they are often asked by members of the public for the names and addresses of medical practitioners who give advice on family planning. Medical men who wish to undertake this work or to obtain information about it are invited to write to the Family Planning Association at 64, Sloane Street, London, S.W.1.

Disturbed Micturition in Disseminated Sclerosis.—Dr. E. LEDERGERBER (St. Gallen, Switzerland) writes: The answer given to the question under this heading ("Any Questions?" May 7, p. 832) is not very hopeful. I have had fair success in such cases with a testicular extract containing the hydrosoluble and liposoluble principles (not the artificial product) in women and oestrone in men.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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